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CLINICAL MEDICINE

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54 No. 2

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HER dietary sin is one of *omission*. To keep her figure slender, she abstains from many nourishing foods. The result is an old story—a further increase in the incidence of borderline vitamin deficiency. Equally familiar are the other chapter heads of that story: indifference, excessive smoking, alcoholism, meals abbreviated by pressure of business, and dislikes for certain protective foods, to name but a few. In all of the instances suggested, after prescription of a corrective diet, a dependable vitamin supplement may well be in order. For this you find Dayamin capsules especially well suited. Each easy-to-take, gay red capsule supplies several times the minimum daily requirement for adults of vitamins A, B_1, C, D, riboflavin and nicotinamide, and also pantothenic acid and pyridoxine hydrochloride. Your pharmacy is stocked and ready to fill your prescription for Dayamin today. In bottles of 30, 100, 250 and 1000 capsules. ABBOTT LABORATORIES, NORTH CHICAGO, ILLINOIS.

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ABBOTT'S MULTIPLE VITAMINS

Early Cardiac Signs of Childhood Rheumatism:*

Practical Aspects and Significance

By JOSEPH B. WOLFFE, M.D.* *and* VICTOR A. DIGILIO, M.D.*
Philadelphia, Pennsylvania

AFTER briefly reviewing the generally accepted criteria upon which a diagnosis of childhood rheumatism is based, we will limit our present discussion, as much as possible, to an evaluation of a group of cardiac adventitious sounds most commonly heard in the rheumatic state.

Symptoms

The protean manifestations of childhood rheumatism are fairly well known. This disease may begin from the age of two years upward. Bouts of low grade fever without apparent cause, "growing pains", belly aches, unexplained vomiting 1, 2, 3 (Wolffe and Brim) and nose bleeds may be part of the syndrome. These children appear pale and their hemoglobin is reduced to a greater degree than the erythrocytes. They are subject to frequent respiratory infections, sore throats and tonsillitis. Some of them exhibit choreiform twitches usually associated with behavior changes. These twitches may be mistaken for 'habit tics', thus placing these children under purely psychiatric guidance and depriving them of more comprehensive care. Various cardiac adventitious sounds are heard depending upon the extent and location of the cardiac pathologic processes.

Electrocardiographic and roentgenologic abnormalities and increased sedimentation rates aid in the diagnosis of a good many cases but not in all.

Better provisions now are being made for more complete examination of school children as a result of which numerous so-called accidental heart murmurs are being discovered. There is a marked divergence in the interpretation of these adventitious sounds. This confusion reflects on the importance of such examinations and threatens to undermine an important program in preventive medicine. Parents frequently seek advice of numerous specialists; opinions again are often conflicting.

Case Report

The following case report is a perfect illustration of the existing confusion: J. L., age 5, a child whose mother has a well compensated rheumatic aortic lesion was brought to the clinic. The parents, intelligent people, were in a dilemma because of varied professional opinions. Four months ago at the occasion of a tonsillectomy, the mother was told by the resident physician that the youngster had a slight murmur which was of no significance. A few weeks thereafter the school physician, at the occasion of the child's enrollment in kindergarten, told the parents that the child had a serious heart condition which necessitated immediate attention.

Subsequently the child was taken to a pediatrician who explained to the mother that the murmur was barely audible and of an accidental hemic type

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which is not uncommon in children of this age group and that it was best to forget about it. In the meantime, a few more physicians, friends of the family, also expressed varied opinions. The case was again discussed by the parents with the school physician who stated that she was surprised that so loud a murmur which she could hear, even through the child's clothes, should be considered of functional nature, and she requested further studies. The child was brought in to us to prove to the school authorities that there was nothing the matter with her. The parents gave the impression of taking the school diagnosis as a personal insult which is to be understood from a psychological point of view. Only after long deliberation and persistent questioning could we get a history of childhood rheumatism in this case. The child in the past had had occasional bouts of unexplained fever, frequent belly aches and at night pains in the legs which her mother would rub occasionally with alcohol for relief.

The physical examination revealed an alert, sensitive, somewhat pale and well nourished child. There was some heart enlargement to the left, a loud systolic and a very short diastolic apical murmur with transmission of the former to the axilla and the left angle of the scapula. There was a loud inconstant systolic adventitious sound of a rough murmur-like quality over the base of the heart. The second pulmonic sound was markedly accentuated. The electrocardiogram revealed decided P-R delay and right axis deviation (Fig. 1.) Roentgenologically, a straightening of the left heart border was found and some obliteration of the cardiac waistline. There was slight left ventricular enlargement. The sedimentation rate was 27 mm. per hour.

Unfortunately this example is *not* an exceptional case. On the contrary it is a frequent occurrence. Since the school

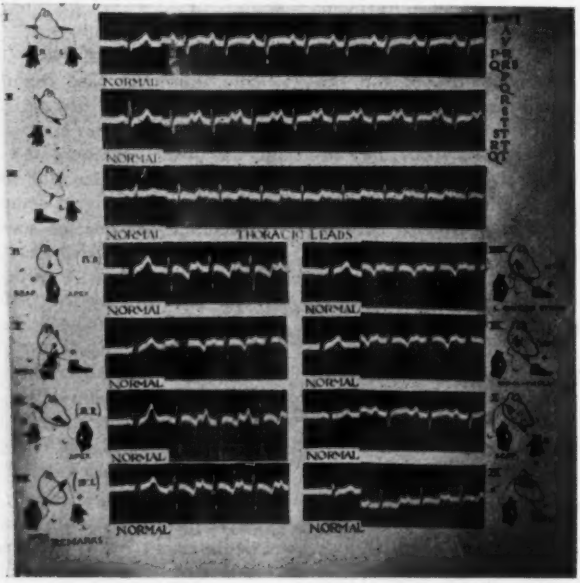

Fig. 1

physician in this case did not have the advantages of a complete cardiovascular survey, and relied only on the physical examination, the adventitious sound which she heard must have been so harsh, so loud, that she could not help but insist on her diagnosis despite contradictory qualified opinions. Is it possible that so loud an adventitious sound which could be heard through the child's clothes could be missed during subsequent examinations by equally competent physicians? No! It is our opinion that the adventitious noises heard by the different physicians in this same case at different times varied greatly in character and intensity and may have even been absent at intervals. *This fact of variability we believe to be one of the most contributing factors to the existing confusion in the diagnosis of early rheumatic heart disease.*

These transitory noises heard over the entire precordium in rheumatic children we believe to be due to basal pericarditis, (4) and it may be well to describe the character of these abnormal sounds in greater detail. Rarely, if ever, do they assume the quality of a to-and-fro friction rub as heard in cases of infectious and traumatic pericarditis, or pericarditis associated with coronary thrombosis.

These abnormal sounds resemble, at times, the soft murmur of a dilated mitral ring or the more roughened murmur of mitral insufficiency, even a diastolic and systolic type of murmur resembling mitral stenosis and insufficiency. At other times, this adventitious sound is loud and harsh, even machinery-like, in character, suggestive of a congenital lesion. It may be a low continuing noise, like a hum, or assume a rolling, scratchy character which may change to a murmuring surge, resembling the wind in the thicket.

It is best heard over the base of the heart, mainly over the third left costo-sternal junction, the midsternum and second right costo-sternal junction, although if loud and harsh enough, it may be heard over the entire precordium. What is important to keep in mind is that all these different types of sounds may be heard during the course of a month or two in the same individual. Not uncommonly many of the changes can be heard in the course of one day, if listened for diligently. They are to be differentiated from the murmurs heard as a result of rheumatic valvulitis because of their rapid changes and because they do not tend to follow the blood current. The following two autopsies may lend some weight to our concept that the above arrays of adventitious noises, which may be looked upon as squeaks in an ill-constructed shoe, are of pericardial origin, and therefore, when elicited, a diagnosis of permanent heart or valvular damage is unwarranted, yet lack of awareness of the importance of these early signs may lead to irreparable pathologic changes.

Case 1. A boy, aged 11 years, died of subacute endocarditis (bacterial) following acute rheumatic heart disease. During life, a variety of adventitious sounds was audible over the base of the heart, third left costo-sternal junction, third and fourth right costo-sternal junctions in additions to a blowing systolic and diastolic apical murmur typical of mitral stenosis and insufficiency. At autopsy, a fine, cottony exudate at the base of the heart was noted especially in the sulcus between the great vessels. (Fig. 2)

The adventitia of both the aorta and pulmonary artery showed a mild, low grade of inflammatory reaction manifested by an infiltration of lymphocytes. The arrangement of these cells showed no evidence of specificity. The sections throughout the myocardial wall, including the pericardium, showed edema of the former and a rather characteristic collagen necrosis of the latter. The pericardium was considerably thickened. Between the serosa and the muscle cells, there was a considerable deposition of

Fig. 2 (Case 1)

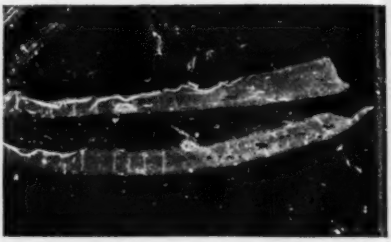

Fig. 3 (Case 1)

fibrin which stained deep red, characteristic of fibrin necrosis. No typical Aschoff bodies were found (Fig. 3)

Case 2. A number of years ago a boy, 9 years of age, was observed in the heart clinic of Mt. Sinai Hospital in Philadelphia. He was diagnosed as a low grade active rheumatic. Members of our staff, including one of us (JBW) diagnosed various valvular lesions from time to time because of existing murmurs. These diagnoses included mitral stenosis and insufficiency as well as aortic valvulitis.

This patient died in an automobile accident and came to autopsy. There was no gross valvular damage to explain the murmurs. On careful inspection of the pericardium, particularly the reflexion of the great vessels and in the sulcus between these vessels, a cottony exudate which was easily wiped away during manipulation of the organ was noted. This exudate was evident at the base of the heart subjacent to the area of maximum intensity of the murmurs.

The question will arise: How is it possible that, in all these years of study of rheumatic carditis by many competent observers, such a frequent pathologic lesion could be missed? Many reasons account for it, among them the following: 1. In the early stages of childhood rheumatism recovery is the rule and exitus the exception; 2. Infrequency of autopsy at this early stage; 3. The hearts at autopsy are not handled with the required care which will preserve the cottony exudate; (washing of the organ immediately following removal tends to destroy the evidence); 4. All the attention in the rheumatic cases, with few exceptions, have so far been concentrated on the valvular and myocardial defects and the search for Aschoff bodies.

The late Dr. Gross in his monumental study of rheumatic hearts described lesions which strongly resemble those found by us (5).

It should be kept in mind that the autopsy observations in only two cases cannot be considered unalterable proof that all such murmurs have a common pathologic basis. Yet similar physical signs made it reasonable to assume that the majority may be explained by the same mechanism.

It would seem reasonable to state that a child with the adventitious sounds described above, even in the absence of symptoms of childhood rheumatism merits careful follow-up and should be treated for active rheumatic carditis in the presence of symptoms. It behooves us to be cognizant that these adventi-

tious sounds are transitory and vary in character and intensity in a comparatively short time. They are important early cardiac manifestations of childhood rheumatism. They precede myocardial and valvular defects, and if properly evaluated and heeded, permanent cardiac damage may be prevented by proper treatment and management.

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DISCUSSION
BY CARDIOLOGIST

The description of early signs of rheumatic fever is fairly accurate. In our experience school physicians are far more likely to call functional murmurs organic and the first case report does not strike me as at all representative.

It is certainly true that basal pericarditis is common in rheumatic carditis and sometimes missed diagnostically (see, the test "Rheumatic Fever", May Wilson; p. 148). I believe the authors might have differentiated the "seagull screech" so well described by Taussig from other adventitious sounds. It is probably not pericardial in origin. I would not agree that these adventitious sounds are readily confused with known types of congenital heart disease. Also adventitious sounds are not uncommon when listening to normal hearts.

I would not agree with the statement that "adventitious sounds" . . . "precede myocordial and valvular defects." All my experience in listening to both adults and children contradicts this. They are usually noted while following a case of known carditis.

Case 2 is quite inconclusive. A cottony exudate, easily wiped away, would seem indicative of a very recent affair to my limited pathological knowledge, and not conceivably responsible for murmurs heard over a period of years. The question "how is it possible that such a frequent lesion be missed" is uncalled for, I believe. The authors themselves have not proved that it is frequent (though others have) and competent observers are probably not missing it too often. Such a paper should include references at least to Ash, Taussig, and Wilson.

DISCUSSION BY DR. WOLFFE

We are grateful for the comments of the cardiologist. However, we do disagree in some respects.

On re-reading the works of Ash and Wilson, we can find nothing in them that has a bearing on the subject of this paper. The seagull's screech of Taussig appears, in our experience, to be a totally different type of adventitious sound. The murmur described by the present authors is shown to be of pericardial origin. While, in this instance, the cottony exudate may conceivably not be responsible for these murmurs, its presence is described as an observation to emphasize the underlying inflammation of the pericardium, which, in itself, is directly responsible in our opinion for the development of the adventitious sound.

In our experience, two cases stand out as examples of basal pericarditis, which were diagnosed congenital heart disease by other observers.

With respect to the last sentence of this paper; the murmur, which we have described, has been detected by us in many, many instances before evidence of myocardial and valvular defects were obtained. One does not question that a carditis may be present at the time. We merely mean that at the time that the murmur described is first elicited, clinical and other evidence of carditis or valvulitis or both is absent.

We are indeed happy to be in agreement that basal pericarditis is common. There seems to have been much controversy on this point in the past.

Curable Heart Disease

(MISTAKES IN GENERAL PRACTICE)

ALL cardiac cases can be helped; some can be cured. A number of papers on the topic of reversible or curable heart disease have appeared in the last few years. One of the latest is by T. K. Williams, M.D. of Paducah, Kentucky in *Kentucky S. J. M.*, Nov. 1945. An artist and an internist on *Clinical Medicine's* staff have collaborated to produce original sketches which emphasize important points.

1. The patient with severe symptoms of heart disease, angina or heart failure who does not show the expected response to diuretics, rest and digitalis, should be suspected of having a thyrotoxic heart (goiter heart).

2. The patient whose heart under the fluoroscope shows a vigorous, snappy, hyperactive beat "just the reverse of what one would expect with a given degree of heart failure or pain" may be suffering from thyrotoxic heart, severe anemia, beriberi heart (vitamin B_1 deficiency), arteriovenous fistula, patent ductus arteriosus, neurocirculatory asthenia and pneumothorax.

3. Dyspnea, cough, palpitation, edema, chest pain and later congestive failure, occur in thyrotoxic heart disease. Diarrhea, weakness and nervousness, loss of weight, increased sweating, irregular heart rate with tachycardia, large pulse pressure, enlargement of the heart and pistol-shot sound in the cubital (elbow) fossa may occur.

The above patients can be returned

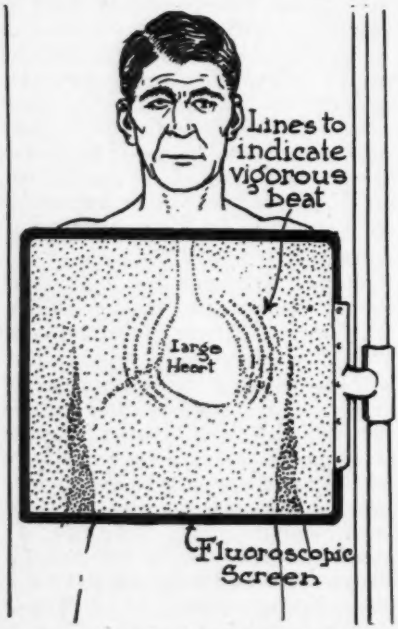

Fig. 1. The heart disease patient whose heart under the fluoroscope shows a vigorous, snappy beat, should be studied for thyrotoxicosis, severe anemia, neurocirculatory asthenia, vitamin B_1 deficiency, arteriovenous fistula, patent ductus arteriosus, pneumothorax.

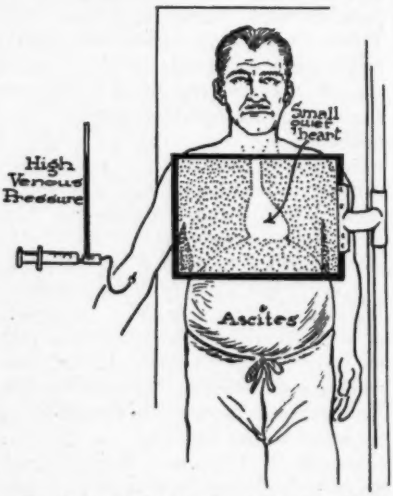

Fig. 2. A small, quiet heart showing diminished or absent pulsations under the fluoroscope may have chronic constrictive pericarditis.

Fig. 3. A loud, continuous murmur sounding like machinery is heard all over the precordium, in patent ductus arteriosus.

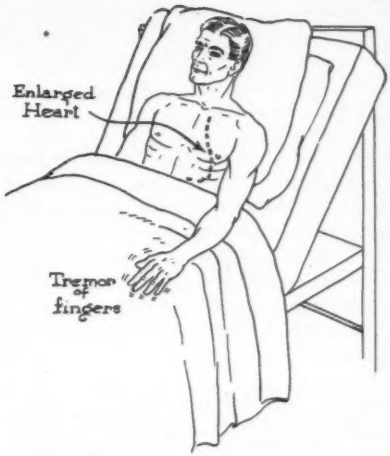

Fig. 4. Signs of cardiac failure plus nervousness, weakness, increased sweating and sense of heat should make one suspect thyrotoxic heart ("goiter heart") which is entirely curable. If cardiac decompensation does not respond to usual therapy, look for thyrotoxicosis.

to a useful, pleasant life *if the physician makes an accurate diagnosis.* "It is a large group of cases in which the difference between accurate and inaccurate diagnosis means chronic invalidism or death and restoration of life and health." The "masked" cases may present only a rough apical systolic or diastolic murmur, with a snapping first sound, or may be considered as having hypertensive heart disease or cardiac decompensation.

Chronic constructive pericarditis: Characterized by a small, quiet heart, a high venous pressure, ascites and enlargement of the liver, plus edema and fluid in the pleural cavity. Under the fluoroscope, the heart shows diminished or absent pulsations. It may be enlarged only slightly, if at all. Later, calcified plaques appear. *Treatment.* Removal of a portion of thickened pericardium is often curative.

Patent ductus arteriosus: This condition is usually recognized by the fourth year of life. A loud, "machinery" murmur may be heard over the entire precordium. Those patients showing under-development, cardiac decompensation or failure are justifiable risks for ligation of the duct.

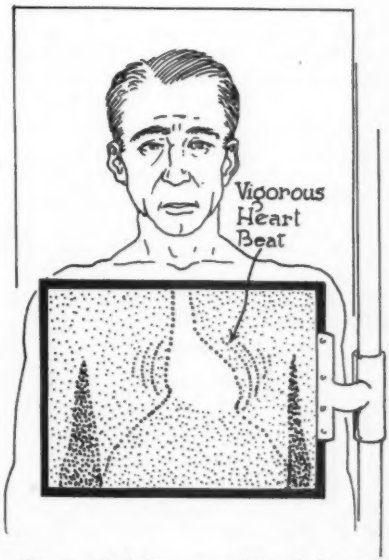

Fig. 5. Alcoholism or a limited diet may produce "beri-beri" heart (vitamin B_1 deficiency). The heart beat is vigorous.

Arteriovenous aneurysm: The communication between the artery and vein may be congenital or acquired, the latter usually being the result of an injury such as a gunshot wound in the femoral or popliteal areas; the patient usually suffers from edema of the extremity, intermittent claudication and ischemic neuritis. A thrill, pulsation and murmur appear over the aneurysm. As a result of the increased flow of blood, the heart is overworked to the point of hypertrophy and congestive failure. Surgical ligation or removal usually cures such patients.

Anemic heart disease: A hemoglobin of 50 per cent increases the work of the heart markedly, or may cause congestive heart failure (hookworm is a frequent cause of such severe anemias). Treatment includes transfusion, liver, iron, rest.

Myxedema heart: The heart is usually enlarged and decreases in size when thyroid extract is administered.

Vitamin deficiency: Vitamin B, deficiency produces the picture of cardiac failure. One must rule out organic heart disease; a history of alcoholism or dietary deficiency is often obtained; painful polyneuritis may be present; prompt response to B_1 (thiamine) occurs.

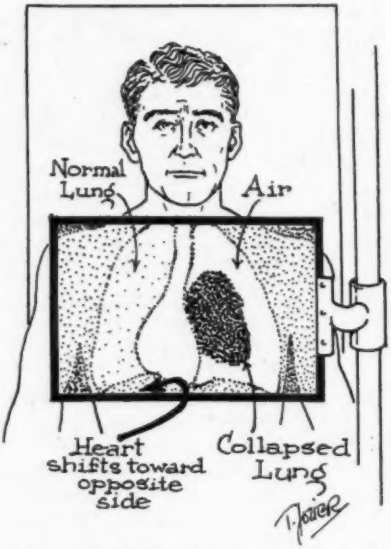

Fig. 6. Pneumothorax arising spontaneously (as from rupture of a lung bleb) may cause chest pain resembling angina, or dyspnea on exerton, as in cardiac failure.

Nicotinic Acid for Vincent's Angina

Oral nicotinic acid is effective in the treatment of acute Vincent's angina. *Clinical Medicine* wrote to Wingate M. Johnson, M.D., Bowman Gray School of Medicine, Winston-Salem, N.C. concerning this therapy. He answered:

"All of the acute Vincent's infections of the mouth (15 to 20) have responded within a week or less. Most of them have had their temperature return to normal within 48 to 72 hours. I have found it is far more effective in the treatment of the acute cases than in the chronic. This, I think, is true of any treatment for this disease.

"The simplicity of the nicotinic acid has appealed to me. Even before nicotinic acid was used. I was in the habit of telling my patients to rinse their mouths out several times daily with pure hydrogen peroxide. I think that it does help clear up these cases, but have not found anything so rapid or satisfactory as nicotinic acid. The nicotinamide apparently works as well and is less disagreeable to many patients."

The Problem of Obesity

By JOHN L. SWITZER, M.D. *Chicago, Illinois*

OBESITY, or the condition of being overweight, is very common. Many persons have a mild grade of obesity. Mild obesity places the individual at a biological disadvantage. Statistics have shown that in obese people over 40, there is a higher mortality rate than in individuals of "normal" weight (1). Newburgh (1) states that for every pound of excess weight from 45-50 years there is approximately a 1% increase in mortality rate. In older individuals there is a sharper increase in death rates.

Obese individuals are more susceptible to hypertension, diabetes mellitus, gall bladder disease (the incidence of gallstones is higher in the obese), and arthritis. Heat dissemination is reduced, which results in profuse sweating. There is less resistance to infection, and fat persons are poorer operative risks.

Causes

The cause of obesity has been in dispute for many years; some believed that obesity was a result of an endocrine imbalance, a constitutional element and a familial tendency.

The more recent school adheres to the view that obesity in all cases is due to a difference between caloric intake and energy output.

One of the basic laws of physics and chemistry is that of conservation of energy and matter. The body is famous for its economy and storage facilities. Therefore if more foodstuffs are taken in than the energy of everyday life expends, some of the excess foods are stored for future use in the adipose tissue.

The question of being overweight is a matter of judgment; no one can strictly adhere to the rigid tables purported to establish the adequate weight for an individual. Each person is an entity, and as such will vary according to body build, height, sex, and occupation. One who does hard labor is in less danger of becoming overweight than one in a sedentary occupation.

Disease

Obesity has been commonly said to be caused by hypothyroidism, hypopituitarism, hypogonadism, and diencephalic disorders. It has been found, however, that patients with these disorders are not uniformly obese. Schnitker, et al (2), and Plummer (3), state that obesity rarely occurs in hypothyroid individuals. Hypothyroid persons may present a reduced energy output while eating a constant dietary; these patients will become obese. In hypogonadism there is a change in the fat distribution, but rarely a total increase in fatty tissue. Hypopituitarism (Simmonds's disease) usually presents cachexia. Increased adiposity with somnolence, genital dystrophy, and polyuria is seen in tumors of the hypothalamic area exclusive of pituitary damage. Usually if there is an endocrine dysfunction or disorder and obesity, the endocrine disorder should be treated per se. (Froelichs' syndrome differs from juvenile obesity.)

Overeating

Being overweight is due to overeating with under expenditure of energy output. Newburgh lists some causative factors contributing to the problem of obesity: 1. Overemphasis by the parent of the importance of food; 2. gratification obtained from food flavors; 3. the comfortable feeling of a full stomach; 4. a carry-over of youthful food habits

to adulthood; 5. the temporary feeling of security and respite from mental, social, or sexual tension; 6. bedridden patients with restricted activity who over-indulge in foods and sweets.

Obesity in children is frequently a result of parental maladjustment. Bram (4) believes that an unbridled appetite and parental indulgence are responsible for 95% of the alimentary obesity in children. The dietary habits of the family are also important. Obesity in the child may be the result of a mother's need to overfeed the child and of her training the child to overeat. This may be the result of a neurotic need on the mother's part as an expression of her desire to act as a good mother, and to allay her fears of rejection towards the child. Also it may be an expression of an anxious mother who wishes to make her child strong and healthy and who feels that physical resistance is encouraged by the ingestion of food. Psychotherapy of the mother often aids in the reduction of the child's obesity. Clinically it has been seen that individuals who are insecure are more obese than those who are socially, psychologically, and financially well established.

Handling the Patient

Excessive weight causes some degree of conflict as it makes persons look older and some people are aware of the organic complications which may occur as a consequence of obesity. Also, there is a conflict between the desire to lose weight and the pleasure of eating. The usual approach to the problem of obesity is on a purely physical basis, that of calories, endocrines, and exercise. However, a study of the life situations of the patient may disclose the needs and cravings which the patient attempts to satisfy through the gratification of eating (oral satisfaction) and a rational handling of these situations may answer the problem of reduction. It is interesting to note that many patients who are obese and are placed on a diet at home fail to lose weight even though they swear that they have adhered to their diet. If these same people are given a similar diet and are hospitalized where they have no access to other foods, and where the air of treatment prevails, they consistently lose weight. Usually if a satisfactory weight loss is demonstrated to the patients they will no longer cheat and will be cooperative. However, vigilance is necessary during their hospitalization to prevent the smuggling in of food by well-meaning friends of the patients.

Treatment

The adage that an ounce of prevention is worth a pound of cure is very true in the problem of obesity, and recommends better education of the mothers and grandmothers of the children as well as adults, into the normal dietary requirements and the consequences of obesity. Treatment of obesity is fairly simple, but should always be carried on under adequate supervision. A reduction of the caloric intake with an increase of energy output will accomplish much. Because of the many advertisements that offer quick, painless, effortless weight loss without dieting that appear in many lay publications, it is often difficult to convince patients that food reduction is the only successful method of attack. This is particularly true when overeating serves an emotional purpose and this may require psychiatric management.

Diet

Weight loss by dietary means should be gradual, averaging about three pounds per week, with an occasional rest period. Diets should be formulated for the individual which may need adjustments until the patient has maximal benefit with minimal discomfort. During these periods of food restriction, vitamin supplements should be given (5). The purpose of a reduction diet is to reduce the present weight of an

individual to a new level based on the height, body build, age and sex. The maintenance of maximal physical efficiency, mental alertness and resistance to infection must be considered. When obesity is pronounced (the body weight is 25% or more above normal) weight reduction is brought about by placing the patient on a diet with a caloric intake of 40-60% below his energy requirements; he is hereby forced to consume his own fat (6).

Certain dietary foods must be restricted. Fats, fatty foods, and carbohydrates should be withheld. Bulky foods such as green leafy vegetables which have a low caloric value will usually satisfy the appetite. Water restriction is detrimental. Alcohol and the popular carbonated beverages have a high caloric value and should be restricted.

Early in the reduction there is retention of water and salts in the tissues and this may cause some discouragement. This leaves in time and an actual loss in adipose tissue is apparent.

In Children

In children a common practice is to maintain the present weight and allow the child to grow into his normal weight. Bronstein, et al. (7) state that in children no one method of management has been found that will produce an appreciable weight loss.

Exercise

Exercise as a method of reduction may be misleading, particularly if there has been much perspiration. The loss of water through sweating will give an apparent weight loss. Exercise is very inefficient as a 250 pound man must walk 36 miles to lose one pound of adipose tissue (8). The exercise may stimulate the appetite with deleterious effects on the will power and weight loss.

Drugs

A number of drugs have been used to produce weight loss; among them are tincture of belladonna, digitalis to the point of nausea, amphetamine (Benzedrine) to dull the appetite and thyroid extract or substance to increase the metabolism. The use of thyroid should be followed by frequent basal metabolism tests. The effect of these drugs is lost after discontinuance, and a dietary and psychotherapeutic approach will produce a more physiologic and lasting effect. Dinitrophenol should not be used. The patient must be warned against faddism.

It will be seen that the problem of obesity is far-reaching and that the diagnosis and treatment of the fat patient requires patience, skill and cunning.

Summary

The causes, implications and treatment of obesity are discussed. The patient is warned against the use of fads in dieting. No sample reduction diets are given as reduction is an individualized problem and must be tailored to the patient.

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Clinicopathologic Conference (Case I)

The ideal method of medical teaching is the conference which brings together clinical concepts, which are attempts at projecting the human mind into the human body, and their proof or disproof at the postmortem table. *Clinical Medicine* will publish a series of such conferences in brief form, with the information being given in illustrations and tabular form wherever possible. The physician who wishes to learn can cover up the solution, and jot down various possibilities. If you like them, please let us know. If you can suggest a better method for easier grasping or studying of a case, we would like to have your ideas.

Case I

A 54 year adult male was admitted with the complaint of abdominal pain. His previous health had been good. His symptoms are listed on Fig. 1 together with their duration. The continucus, generalized abdominal pain had a gradual onset. This was followed by constipation, there being no bowel movement for 5 days. After taking the magnesium sulphate (Epsom salts), severe cramping pain appeared in the lower abdomen. An enema was taken just before admission.

Examination: Fig. 1 indicates the salient points on admission. A scout x-ray of the abdomen revealed fluid level in the left iliac fossa and left hypochrondrium, which were thought to be due to the enema.

Another enema returned a fair amount of feces and flatus. "It was decided that there was insufficient indication for surgical intervention and he was treated expectantly."

Fever is indicated on Fig. 2.

Fig. 3 portrays the abdominal pain, which rapidly disappeared after hospitalization. The patient was allowed to be up and around, and felt well for 5 days. There was a sudden onset of generalized continuous abdominal pain, collapse, rapid, weak pulse, cold, clammy skin and temperature of 96°F. "Examination at this stage revealed signs in the abdomen identical with those on ad-

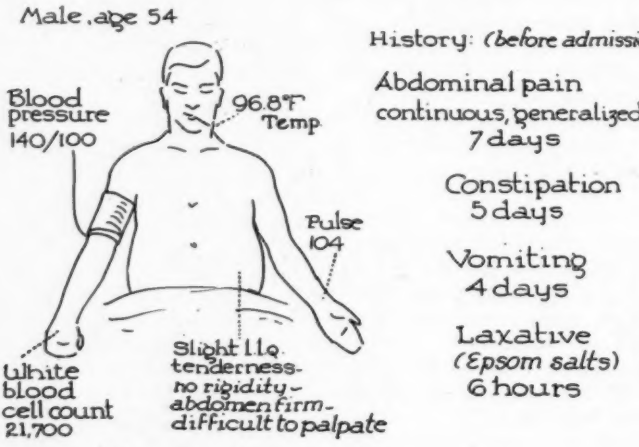
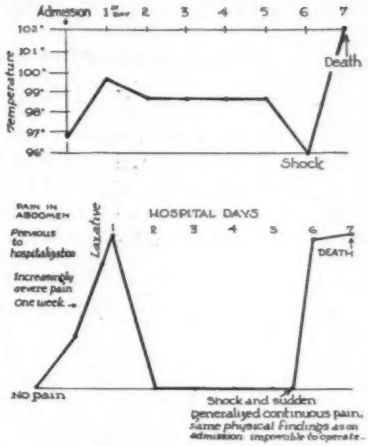

Male, age 54
Blood pressure 140/100
96.8°F Temp
Pulse 104
White blood cell count 21,700
Slight l.l.q. tenderness- no rigidity - abdomen firm - difficult to palpate
(Condition on admission)
History: (before admission)
Abdominal pain continuous, generalized 7 days
Constipation 5 days
Vomiting 4 days
Laxative (Epsom salts) 6 hours

Fig. 1

mission but he was in a much worse condition and unfit for operation. There was doubtful shifting dullness in the abdomen. His general condition remained poor, his fever rose to 102°F. and he died on the seventh day."

Differential diagnoses suggested included: (1) Incomplete intestinal obstruction; (2) hemorrhage or vascular accident; (3) perforation of a hollow muscular organ; (4) mesenteric thrombosis; (5) acute pancreatis; and (6) acute appendicitis.

Dr. H. Katz suggested, "His illness started suddenly with appendicular obstruction, probably due to a fecolith. Obstruction was not complete but of intermittent nature, causing symptoms for a week before admission. The purgative aggravates symptoms and causes a complete obstruction of the appendix which terminates in gangrene of the organ with disappearance of the pain. On the fifth day, the appendix perforates, causing severe pain and collapse and death from general peritonitis. The sudden collapse could also have been caused by mesenteric thrombosis from the gangrenous appendix involving the ileocecal and superior mesenteric veins."



Your diagnosis:———————— (underline the most probable).

Postmortem Findings

Fig. 4. indicates the significant postmortem aspects. "The peritoneal cavity contained several ounces of yellow-white pus. The coils of intestine were loosely matted together by fibrino-purulent exudate. The appendix was found lying quite free in the usual anatomical position. Its terminal inch was much swollen and acutely inflamed. There was a large perforation on the anti-mesenteric border and a stercolith (fecal mass) ¾ by ¼ inch was found lying free in the peritoneal cavity close to the appendix."

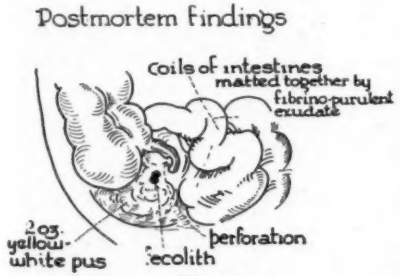


Fig. 4

"This case certainly supplies a most apt illustration of the insidious march of events so frequently encountered in appendicitis affecting middle-aged and elderly subjects. Despite the absence of fever, ileus, tenderness, peritonitic sign (rigidity) and other evidence to suggest it, this patient developed a generalized peritonitis, the only clinical manifestation of which was a rather persistent tachycardia" (Dr. D. Meiring).

(These notes were abstracted from a report in *Proceedings of the Post-Graduate Association*, Cape Town, South Africa, 5:95-99 (Apr.) 1946.—Ed.)

"Place," in the Geriatric Regime

An Outline for the General Practitioner

By RAYMOND SHETTEL, M.D., *Mt. Wolf, Pennsylvania*

THE Ancients, the Greeks, the Romans, all early peoples, recognized the importance of place for certain of their special therapeutics, as the baths, the spas and resorts. In America, the Indians were the first to stress a place as being important in treatment of special conditions, and used many of the mineral springs for medicinal purposes before the arrival of the white man. In geriatric practice, much may be done with and for the patient if he or she is in the proper locale.

This outline is to remind the physician of the possible places for his geriatric patients to insure proper diagnosis or adequate treatment. If referred to the proper place first, the patient is spared many a delay, and his energy is conserved. It is earnestly hoped, and the all out effort is being put forth with preventive and preclinical medicine, that in the future the aged will no longer need to be considered a care, and then such an outline will have no practical value.

Home

The home is advisable when the medical condition is obvious and environment is satisfactory. With our bounding advances in geriatrics, still a large percentage of aging patients will be cared for in the home, by the general practitioner and without special geriatric consultation.

A. *Acute conditions*—those which respond without complications. Geriatric acute illness may be prodromal of severe underlying condition.

B. *Chronic conditions*—when nursing care and diet are adequate, medical outcome apparent. The family, the relatives, or friends are responsible.

Office

The medical attention here is generally more complete than at home, but eventually, these cases become one of home or institutional care.

A. *Consultation*—time is a very important factor.
   1. *History*—must be accurate, complete, and the efficiency of it may depend on the time factor.
   2. *Physical examination*—a systematic exploration of the entire human organism, with "no sins of omission."
   3. *Minimum laboratory work*—at least enough for the patient's well being.
   4. *Therapeutic regime*—the best. but not too severe for the aging patient.

B. *Repeat visits*—very important to add additional information, follow progress, and find new conditions.
   1. *Recheck consultation*—if carried out completely will show the value of recency, frequency and repetition.
      a. *History* — much information may be added by thoroughly retaking histories. Patients may be in a different mood than previously, and add facts, especially of psychosomatic interest.
      b. *Physical examination* — repeated, will help indicate clinical course.
      c. *Laboratory work* — if rechecked may give startling information.
      d. *Therapeutic regime* — conditions in geriatric patients may be slow to respond.
   2. *Special Therapy* — as indicated and tolerated.

a. Injections.
b. Diathermy.
c. X-ray.
d. Medications, and so on.

3. *Outline future course:* this must fully consider;
a. Preventive medicine.
b. Preclinical medicine.

Private Clinic—(Private or Group Practice)

A. *Health inventory* — nothing omitted.
1. Complete history.
2. Complete physical examination.
3. Multiple specialist opinions.
4. Complete laboratory work.
5. Adequate therapeutic regime.

B. *Specialist treatment*—is often required, and the specialist must have a thorough understanding of the geriatric state. The usual ones we think of as a necessity are:
1. Ophthalmologists.
2. Urologists.
3. Surgeons.

Others are otolaryngologists, radiologists, internists, dermatologists, cardiologists, psychiatrists, pathologists, and neurological surgeons.

Hospital

Here we hope the geriatric patient will receive the best that medical science has to offer. Excellent cooperation between the surgical and medical staff is required.

A. *Necessity*—there is no other possibility.
1. *Surgery*—the days of surgery in the home are past, but the length of time surgical patients are remaining in the hospital is being shortened.
a. *Injuries*—including shock and fractures.
b. *Acute surgical conditions.*
c. *Elective surgical procedures* —many geriatric patients are now receiving early prophylactic surgery in place of following the advice "let it alone, if it does not bother you."
2. *Acute illnesses* — respond better under hospital routine.
a. *Complications*—are definitely a hospital problem.

B. *Probability*—it is simpler to have the patient where the specialists are, than to attempt consultations for bedridden patients outside of the hospital.
1. *Observation*—to arrive at a hidden diagnosis, or multiple diagnoses, that are so common to geriatric patients.
2. *Diagnostic survey* — should be the most meticulous search for physiological disturbances.
3. *Adequate nursing care*—a difficult problem in the home even with the Visiting Nurses, Public Health Nurses and related groups.

Post Hospitalization

The place of care is determined by the following conditions of the patient:

A. Require no medical attention.
1. Few, but appreciative.

B. Require recheck by specialist.

C. Require recheck by specialist and some attention of general practitioner.

D. Require prolonged attention of general practitioner with expectant recovery.

E. Require continual treatment with no hope of improvement.
1. Relief of symptoms.

Institutions

Institutional care is continually increasing, but apparently the patients often reflect if it is the proper thing. In institutional care, the very important occupational therapy reaches a maximum of efficiency.

A. *Government Institutions.*
1. Veterans' hospitals.
2. State hospitals.
3. County homes and similar institutions.

B. *Religious and Fraternal homes.*
1. Homes for aged.

C. *Convalescent homes* — serve a convenient place, but many require improvement.
1. Private.
2. Religious.
3. Fraternal.

D. *Special institutions*—increasing demand for them, and increasing importance.
1. Community Centers for the aged.
2. Farm colonies and related groups.
3. Counseling centers.
4. Mental—the present demand for mental care requires special institutions.
5. Epileptic institutions.
6. Tuberculosis Sanatoriums
7. Leper colonies.

Travel

Travel has been a neglected factor during war years.

A. *Change of climate*—a very desirable therapeutic measure depending on the physical and mental diagnoses. Examples are:
1. South in winter—helps to avoid acute infections.
2. Seashore—if the living conditions are not too crowded.
3. Mountains—Refreshing and quiet.

B. *Change of environment*—an important part of any therapy.
1. *Visits to relatives and friends* —these usually help the aged in appreciating their usual place of abode.
2. *Pleasure trips*—are perhaps more pleasure to the ones usually responsible for the individual's welfare.
   a. *Tours*—very convenient.
   b. *Excursions* — the planned precision is a good influence.
   c. *Steamship travel*—requires living in a new, well organized world.
   d. *Air travel*—limited according to the physical capacity.

This outline is offered to the general practitioners to keep before them the geriatric possibilities, when the anxious families ask, "What shall we do with them, since they are not able to care for themselves?" The flexibility of the patients, if not of the outline, will permit them to be shifted from one locale to another as conditions change, but we must individualize each patient and have them at the place where they can best add life to their shortening years, and yet have maximum productivity and pleasure.

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Conservative Treatment of Frontal Sinusitis

By F. A. WIER, M.D., *Racine, Wisconsin*

THERE is an unpopular belief among the laity and a good many physicians that frontal sinusitis is incurable. One often hears, "There is nothing to do for sinus." This no doubt deters the patient and the physician from making any sincere effort to cure it. Any physician who will take a little time out to study the anatomy of the nasal passages and the frontal sinus, and the technic of manipulating the head mirror and a nasal speculum, is in a position to start studying and treating frontal sinusitis. The proper technic is the main thing; it makes the difference between a good workman and a poor one.

Normal Anatomy of the Nose

The nasal cavities are two large spaces divided by a partition, or septum, composed of bone and cartilage. The roof of these cavities is formed by the nasal bones in front, the body of the sphenoid behind and the cribriform plate of the ethmoid between them. The floor is formed by the palatine process of the superior maxilla and the palate bones. The septum is formed by the perpendicular plate of the ethmoid above, the vomer below. The lateral walls are formed by the superior maxillary, lachrimal, palate and sphenoids.

Each nasal cavity communicates with four nasal accessary sinuses. The frontal sinuses above, the sphenoidal sinus behind, the ethmoidal sinuses on the side behind the middle turbinate and the maxillary sinuses in the superior maxillary bone. The lachrimal canal connects the nasal cavity with the eye, and empties under the lower turbinate bone.

The ductus nasofrontalis connects the nasal cavity with the frontal sinus, and empties under the middle turbinate through the infundibulum ethmoidale cavinasi (a "funnel shaped" passage).

In order to enter the frontal sinus, the sound or canula should be advanced toward the anterior end of the infundibulum so as to pass into the frontal sinus through the ostium frontale.

The nasal cavities are further divided into three longitudinal passages formed by the three turbinate bones. The middle passage lies between the middle and inferior turbinates. These passages are very important, as they are the drainage canals of the nasal accessory sinuses.

The middle passage is the most important as it drains the frontal sinus, the ethmoidal cells and the antrum of Highmore. The area under the middle turbinate is known as the vicious circle. Bacteria find their way under the middle turbinate and into the ostium nasofrontalis from whence they are forcibly blown up through the ductus nasofrontalis into the frontal sinus. I don't believe that bacteria find their way into the frontal sinus or the middle ear without a good boost from violently blowing the nose by holding one nostril closed. There is a good deal of pressure behind that blow, and of course all of the accessory nasal sinuses and the conjunctival sac can be infected in the same way. Children should be cautioned against violently blowing the nose by holding one side.

Treatment of Frontal Sinusitis

The first important consideration is to relieve the pressure of a swollen middle turbinate over the ostium of the ductus naso-frontalis which prevents

drainage from the ethmoid cells and the frontal sinus.

Treatment

The directions on the bottle of most nose drops, reads "2 to 5 drops in each nostril not oftener than every two hours." Now this shows an utter lack of attention to the anatomy of the nose by the manufacturer and by doctors who follow their directions.

In the first place, if a patient could measure 2 to 5 drops, there is only one place he could drop it and that would be on the floor of the nose where it would run down his throat and would do no good, as the sinus is two inches above the floor of the nose.

First, we shrink the lower turbinate which gives us a clear view of the middle turbinate. We tease out a piece of best grade absorbent cotton two inches and a half long and one inch wide, then moisten it (not sloppy) with Sulfedex solution (Abbott), fold ½ inch of one end over the end of any blunt thin instrument e.g. a probe, or the patient may use a large twisted hairpin, and gradually and carefully insert this over the lower turbinate and allow it to remain ten minutes. This will enlarge the nasal cavity so that a good view of the middle turbinate may be had. The turbinate may be very large, even pressing against the septum and pus may be seen oozing from under it, or it may be pressing against the lateral wall so that no pus is visible, but the patient may complain of a terrific headache, especially if this is an acute case from a recent cold. The pain is caused from the pent up secretions in the frontal sinus which are unable to escape.

We now apply a thin pack of cotton moistened with Sulfedex under the middle turbinate, and a large pack all over the turbinate. Have the patient remain in the office for a half an hour and repeat the process. Now instruct the patient how to insert a pack in his own nose, tease out a piece of cotton as before mentioned. Moisten with Sulfedex and show him how to insert the cotton covered applicator. First place the tip inside the tip of the nose against the septum and the roof of the nose. One meets little resistance here while if the applicator was placed against the lateral wall, the first obstruction would be the lower turbinate. Have the patient ease the pack up his nostril for about two inches aiming right between the eyes. This will rest directly over the middle turbinate. After a little practice the patient will become quite proficient. Have him repeat this every two to four hours, leave the pack in one half hour. These packs relieve the headache by promoting drainage and eliminating the infection. I have seen a severe headache relieved in ten minutes. This is the best treatment for a cold. I have aborted a beginning cold on myself in one day.

Internal Treatment

There is one remedy that has a specific action on the mucous membranes of the nose, throat and ear: Neporontosil (Winthrop) 5 grain tablets. Dosage: One tablet every two to four hours for 25 doses; children up to 12 years, ½ tablet 2 to 4 times a day; 12 to 16 years, adolescents, one tablet every six hours. This sulfonamide drug is practically free from toxic effect. Have the patient call at the office every day until pain and other symptoms disappear.

A very small percentage of patients may require surgery. These should be referred to a conservative rhinologist. The external operation of chiseling a hole into the sinus is obsolete. The patent and semi-patent medicine venders have devised a lot of funny gymnastics which they claim will force medicine into the sinuses. One of their stunts is to have the patient lie prone on a table with his head hanging over. Then they direct that 2 drops of their solutions be instilled in each nostril, then to shake his head from side to side. This by

some hocus-pocus is supposed to flush the sinus, in spite of the fact that the middle turbinate may be so swollen or hypertrophied as to occlude the ostium of the ductus nosofrontalis completely. I fear that they have been fooling the people and some doctors for the past 40 years. After all it is more important to get something, pus, out of the sinus. Most any pus cavity will take care of itself if drainage is provided.

Skillern, in his book on Accessory Sinuses of the Nose, says, "The prognosis of acute frontal sinusitis is good, if sufficient drainage be established early in the disease." A Nicholas Nasal Syphon used after shrinking the middle turbinate will do it very efficiently.

Artificial Pneumoperitoneum

By ANDREW L. BANYAI, M.D.,* *Milwaukee, Wisconsin*

WHEN in 1893 the Dutch physician, Nolen, and the Viennese physician, Mosetig-Moorhof, introduced the therapeutic use of artificial pneumoperitoneum, hardly anyone could have foreseen the tremendous strides and expansion that have taken place in the clinical application of this method of treatment during recent years. Originally pneumoperitoneum was used for the treatment of tuberculous peritonitis only. Its use in this condition was based on observations which showed that, following simple laparotomy, many cases of tuberculous peritonitis became cured. It was reasoned that the contact of the atmospheric air with the peritoneal surface elicited certain reparative changes in the peritoneum which were conducive to healing of the tuberculous lesion. Subsequent experience of a great many clinicians brought about ample proof of the efficacy of this method in the treatment of tuberculous peritonitis.

Intestinal Tuberculosis

Thanks to the inquisitive minds of American medical pioneers of the early twentieth century, attempts were made to apply pneumoperitoneum in the management of intestinal tuberculosis. The men who had the courage to follow up the logic of their conviction have been vindicated. Information published on pertinent results reveal that periodically repeated injections of measured amounts of air or oxygen exert a definite curative effect upon a tuberculous intestine.

The benefits derived from this treatment have been attributed to the following factors:

1. Increased intra-peritoneal pressure, which stimulates the sympathetic nerves. Such stimulation entails a retardation of the hyperactive intestinal peristalsis which is so characteristic of tuberculous involvement.

2. Mechanical protection of the diseased intestine by the layer of air injected, from possible disturbing extra-abdominal factors.

3. Hyperemia of the peritoneal surface induced by the air injected elicits reflex changes in the wall of the diseased bowel, which are of aid in the healing process.

Pulmonary Tuberculosis

In 1931, I noted that periodically repeated injections of air into the peritoneal cavity were capable of elevating the diaphragm, and thus began the use of artificial pneumoperitoneum for the treatment of pulmonary tuberculosis.

Accurate measurements before and during pneumoperitoneum treatment show that one can decrease the apico-

*Associate Clinical Professor of Medicine, Marquette University Medical School.

basal diameter of the lung, reduce its roentgenologic surface area and the lung volume. These changes signify a satisfactory relaxation of the tuberculous lung. Numerous reports from widespread parts of this country as well as from abroad indicate the usefulness of artificial pneumoperitoneum in the treatment of selected cases of pulmonary tuberculosis.

Emphysema

On the basis that the intraperitoneally injected air elevates the diaphragm, it was proposed to administer pneumoperitoneum for the treatment of emphysema. Roentgenologic examinations revealed that this measure restores the normal respiratory function of the diaphragm and thereby relieves dyspnea of the patient with emphysema. On the basis of analogy, pneumoperitoneum has been used successfully in the treatment of bronchial asthma.

Hemoptysis

The applicability of artificial pneumoperitoneum in pulmonary hemorrhage of nontuberculous origin, which is uncontrollable by medical means, has been proved by clinical experience. Its benefits in this condition are explainable; first by the decrease and obliteration of cavities, if present; and secondly, by the relaxation of normally stretched-out blood vessels. The relaxation and contraction of the latter after induction of pneumoperitoneum leads to a closure of defects in the bleeding vessel wall.

Hiccup, Colitis

Contributions to the current literature on pneumoperitoneum present gratifying results by this method of treatment in severe hiccup, pernicious vomiting of pregnancy, ulcerative colitis and several other frequently seen conditions.

[Attention has been called to the great field of everyday use of artificial pneumoperitoneum by Banyai in his recent comprehensive and competent monograph, "Pneumoperitoneum Treatment" (C. V. Mosby Co.) The simplicity and safety of its technique and the therapeutic results accomplished thereby suggest a wider application of this method of treatment by the modern practicing physician.—Ed.]

Coronary Thrombosis vs. Acute Pericarditis

Acute pericarditis may closely simulate coronary thrombosis as to severe substernal pain which radiates to shoulder and arm; dyspnea, fever, leukocytosis, elevated sedimentation rate, pericardial friction rub, cardiac enlargement, arrythmias, evidences of shock with drop in blood pressure and electrocardiographic changes of a superficially similar appearance.

Differential diagnostic points: The pain of acute pericarditis is often aggravated by respiration, by changes in body position and by cough; the shortness of breath in pericarditis is more closely related to the painful shallow respirations. Pericardial friction rubs tend to be present at onset and persist longer.

Pulmonary and especially pleural involvement, as shown by physical and x-ray examination, is more frequent in pericarditis. More rapid and striking changes in heart size occur in pericarditis. The fever and leukocytosis are higher, more persistent and recurrent, and the heart rate is slower in pericarditis. Electrocardiographic changes are helpful.—Lt. Cmdr. Clayton B. Ethridge (MC) USNR in *Hawaii Med J.*, May-June, 1946.

Fracture of the Clavicle

Methods of treating the fractured clavicle include the broomstick method, lately revived by Philip Lewin. The methods illustrated do not require complicated appartus.

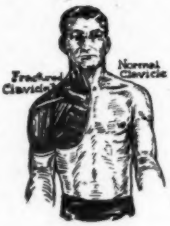


Fig. 1

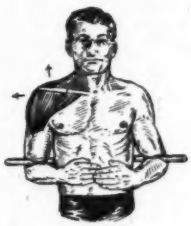


Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 1. The anatomy of the fractured clavicle with the usual displacement, the inner fragment tiled tilted up by the sternomastoid muscle and the outer fragment depressed, tilted down and carried inward by the weight of the arm and the pectorals, teres major and latissimus dorsi.

Fig. 2. The reduction of the fracture by carrying the shoulder upward, posteriar and lateral.

Fig. 3. The placement of protective pads in the axillae.

Fig. 4. A figure of eight double spica bandage may be applied

Fig. 5. A plaster of paris double spica may be applied.

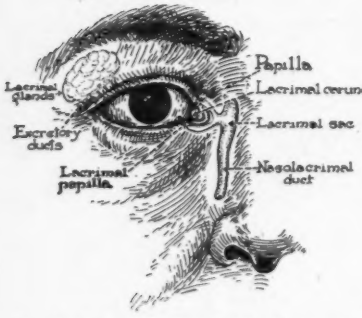
Fig. 6. A sling may be used for several days.

Fig 7. Watson-Jones technic. The patient sits on the front of a stool, the operator standing behind with his foot on the stool and his knee between the patient's shoulder blades. Wool pads are placed in each axilae and several long bandages, 5 or 6 inches in width, are applied in the form of a figure eight which crosses between the shoulder blades and passes in front of the shoulders. With each turn of the bandage, the shoulder girdles are pulled back and up as strongly as possible without compressing the axiliary vessels. The bandages may be stitched together to prevent slipping, and should be reapplied every second or third day for 2 weeks. For the first 10 days, the shoulder is elevated by a triangular sling tied over the opposite side, following which it is left free for exercises. The bandages may be discarded after 3 weeks or when bony union is clinically evident. X-ray evidence of union is often delayed.

Eyelid Lacerations

A simple technic for the suturing of lid lacerations involving the canaliculi is that of Charles A. Rankin, M.D.* This method will prevent scar tissue obstructing the canaliculi and subsequent overflowing of tears onto the cheek.

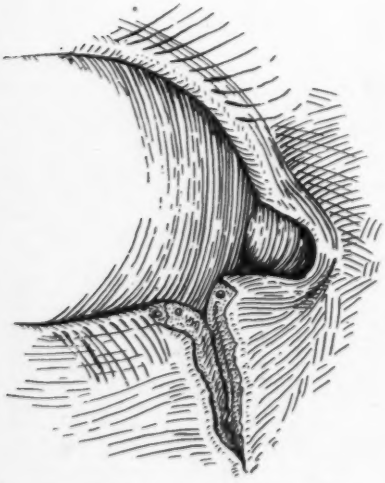
*Ludlow Street and Heather Road, Upper Darby, Penn.



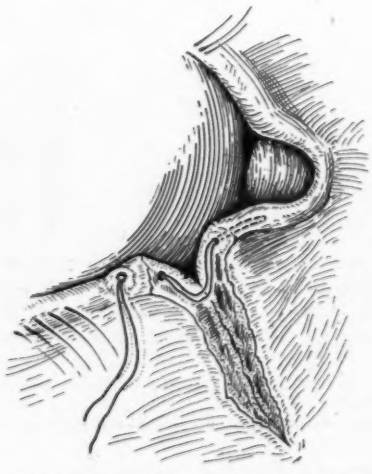
1. Anatomy of the lacrimal apparatus. (Adapted from Tom Jones.)

Clinical Medicine's artist first shows the anatomy of the normal lacrimal apparatus. (Fig. 1.) The direction of tears is across the eyeball from lateral to medial aspects, a point that should be remembered in placing medications in the eye. Solutions should be instilled into the lateral angle of the conjunctival sac.

By means of passing horsehair suture into the mouth of the canaliculus, at the punctum, the distal torn edge of the canaliculus can easily be found. With more difficulty, and under loupe magnification, the proximal or nasal end of the canaliculus can be found as a small pink-white dot through which it is possible to pass the folds of horsehair suture. These are passed as far nasalward as possible and suturing of the laceration both conjunctival and skin is accomplished with these folds of horsehair suture in place assuring a patent duct. After suturing is completed, the horsehair suture is bent downward and held in place by a skin suture until healing has been completed. In most instances a functioning duct results which may be made more assured by daily irrigations following the removal of the horsehair sutures.

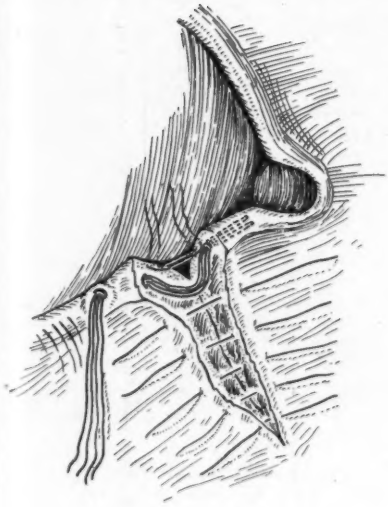


2. Laceration involving lower canaliculus.

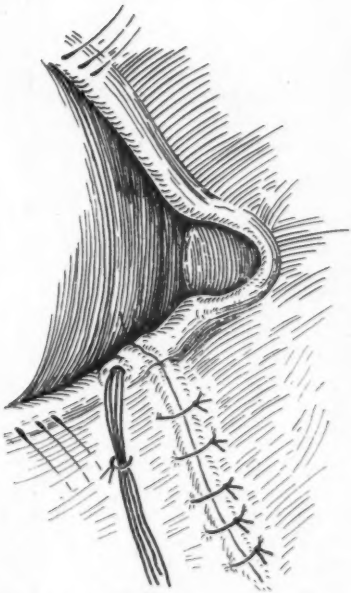


3. Double horse hair suture in place through punctum and torn ends of canaliculus.

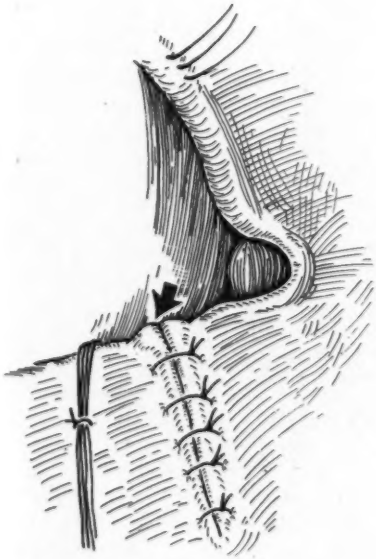
Eyelid Lacerations



4. Redoubled horse hair suture in place having used initial suture material as guide. Conjunctival and skin sutures are in place.



5. Skin and conjunctival sutures tied; drawing lacerated areas together and bent horse hair held in place by dermal suture.

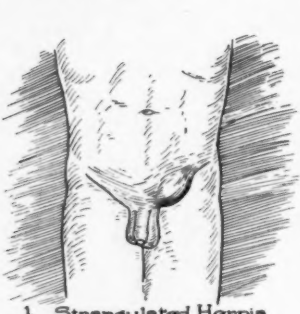


6. Sutures so placed to "hill up" lid margin to over correct deformity in attempt to prevent niching.

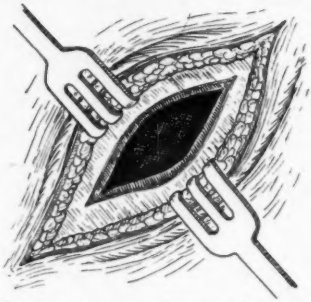
Treatment of Strangulated External Hernias

In patients who are desperately ill, external hernias containing gangrenous bowel may be treated by:

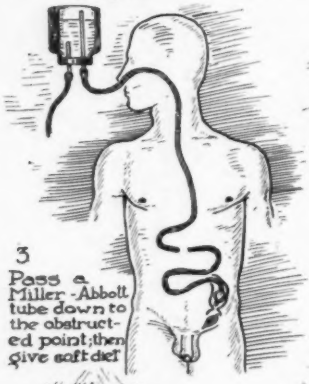
1. Incising the hernial sac together with the gangrenous bowel within it.
2. Deflation of the obstructed bowel down to the point where it is obstructed at the hernal ring with a Miller-Abbott tube. This restores it to a healthy condition and permits giving the patient liquids and soft foods by mouth, thus correcting starvation and dehydration.
3. After the tube has been down for about a week, laparotomy is performed through a low incision; excision of the gangrenous bowel, and intestinal anastomosis performed; the femoral ring is plugged with omentum which is sutured to it; treatment of the abdominal wound with sulfathiazole after closure of the peritoneum.—W. D. Gatch, M. D., 'Indianapolis) J.A.M.A., Nov. 10. 1945



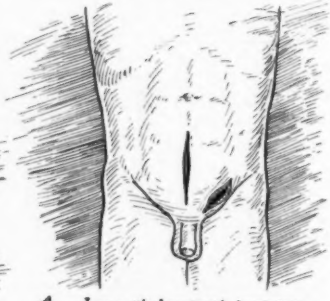
1 Strangulated Hernia



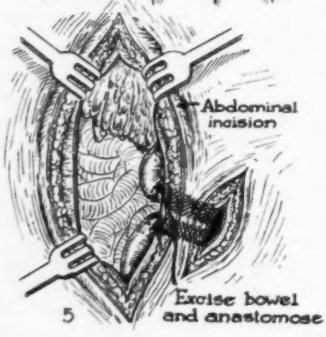
2 Incising skin, fascia, & bowel



3 Pass a Miller-Abbott tube down to the obstructed point; then give soft diet



4 Low abdominal incision



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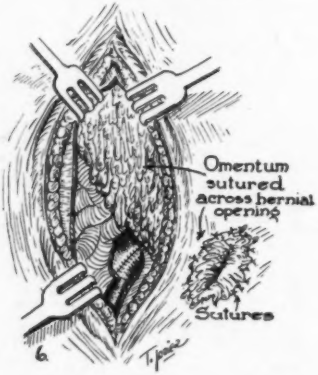

6

Newer Concepts in the Treatment of Diabetes Mellitus

By WILLIAM H. SHLAES, M.D., *Chicago, Illinois*

THE past ten years have seen a marked degree of change in the profession's attitude and understanding of diabetes mellitus.

We have learned, to paraphrase Jackson, that "all that is sugar is not diabetes"; we have recognized that such varied conditions as head injuries, chromaffin tissue tumors, meningitis, obesity, and liver damage may present hyperglycemia and glycosuria in the absence of insulin deficiency.

In the present discussion, we shall confine ourselves to those newer concepts of diabetes mellitus where there is no question of a proper diagnosis.

Perhaps the most important basic fact which has come to light is the role which the liver plays in this disease. Soskin, Levine, Mirsky, Somogyi and many others have demonstrated that the liver is the sole source of the blood sugar and that the liver itself regulates the level of the blood sugar under the influence of the hormone insulin, balancing its effects with anterior pituitary hormone, adrenal hormone, and thyroid hormone. Although the recent work of Levine, Rice and Evans does indicate that insulin acts in the periphery, we now know that the cause of the tremendous hyperglycemia of the diabetic is due to an excessive production of sugar by the liver, and that the acidosis of the diabetic is due to an excessive production of acetone and ketone bodies by the liver.

One of the earliest experiments along this line was that in which a hepatectomized and depancreatized animal was kept alive with intravenous sugar for as long a period as that animal which was hepatectomized but NOT depancreatized. Of course, the former animal had no insulin whatsoever, but when given sugar, managed to use it as effectively as that animal which possessed a normal insulin content of the blood.

The progression of the diabetic from hyperglycemia to acidosis is explained by the excessive rate of glycogen breakdown in the liver which so depletes the liver of glycogen that the only energy source is fat which the liver burns to acetone and ketone bodies; these acetone and ketone bodies are released to the blood, and the muscles take them up and burn them completely to carbon dioxide and water. The reason for the acidosis under these circumstances is that, although the muscles utilize the acetone and ketone bodies completely, the liver is producing many more times the amounts of these bodies than can be used by the muscles even at peak uptake; therefore they accumulate in the blood combine with sodium and lower the carbon dioxide combining power.

The main physiological action of insulin in this picture is its "thermostatic" action; insulin *sets* the level of the blood sugar at which the liver produces sugar and at which the liver stores sugar. When the blood sugar drops to approximately 70 mg., the normal liver responds to this stimulus by manufacturing sugar and raising the blood sugar level; when the blood sugar rises, as after a high carbohydrate meal or administration of glucose (glucose tolerance test), the liver begins to store sugar and stops manufacturing sugar at about 160 mg%. The difference then between the diabetic organism and the normal is that in the diabetic there is no

insulin to "set" the levels of 70 and 160 mg%, and the height of the blood sugar necessary to cause the liver to stop manufacturing and to store sugar is far more than can be achieved by ordinary carbohydrate intake and excessive glycogenolysis. Mirsky has demonstrated that if one raises the blood sugar levels high enough in the diabetic (1500 mg%), the liver will stop manufacturing and will begin to store sugar.

The significance of these mechanisms in the clinical management of diabetes mellitus is multiple. These mechanisms emphasize that the diabetic organism is a "sugar poor" organism, with the sugar supply in the blood and not in the liver; that sugar must be given to the diabetic, and that insulin must be administered to "mimic" the normal as much as possible so that the diabetic "levels" will approach the normal.

We apply these principles in treatment in both the care of the diabetic coma and the ambulant patient. We should wish to emphasize here that the term "coma" is a clinical one and should be used only clinically and not defined by any chemical, non-clinical terms.

Treatment of Diabetic Coma

In diabetic coma, we administer one hundred units of regular insulin intravenously immediately, and at the same time, one hundred units subcutaneously; then we leave orders for seventy units to be given every two hours. To replenish the sugar supply, we give from 500 to 1,000 Gm. of glucose in the first twenty-four hours, parenterally and orally. We generally start the patient on 10% glucose in saline intravenously, and continue this therapy depending upon the circulatory status of the patient. When the patient is able to retain fluids orally, we give ten ounces of orange juice with half an ounce of sugar every two hours. We cut the insulin dose only as the acetone disappears; we never stop insulin.

In partial answer to those who claim that the diabetic has a tremendous amount of sugar in the blood and therefore, no additional sugar is needed, we quote Soskin who showed that even at levels of 500 mg% of blood sugar, the total amount of sugar in the body of the diabetic comatose organism is so low that a minimum of 500 grams of glucose would have to be given just to approximate the sugar content of the normal man, in a twenty-four hour period.

Ambulatory Diabetic Patient

In the management of the ambulatory patient, we evaluate the caloric needs, for any particular individual, and give normal ratios of carbohydrate without restriction. For example, for the ordinary 70 kg. individual we would prescribe: Carbohydrate 400 grams, protein 100 grams, and fat 70 grams. On this diet, we give the patient an empirical dosage of insulin which we have found is a good starting point. This dose is twenty units of regular insulin three times daily before meals and ten units at 10 P.M. We increase or decrease the dose depending on how heavily he spills sugar in the fractional urines obtained before each meal. After several days of good control on this regimen, we switch insulins as follows: Two thirds of the total dose is given as protamine zinc insulin, and one third as regular insulin, in separate sites each morning.

On this schedule, our patients maintain and gain weight, have a low incidence of acetonuria, and run satisfactory fasting blood sugar levels (120-150 mg%.)

In young girls, who should not put on weight, we lower the carbohydrate fraction but we always keep the carbohydrate content of the diet at least three times as much as the fat.

We also believe in the use of the supplemental vitamins in the management of all diabetics, and use them liberally.

Summary

1. The diabetic organism is "sugar poor."

2. Insulin acts as a "thermostat" in the regulation of the blood sugar.

3. Large quantities of sugar as well as insulin should be used in the treatment of diabetic coma.

4. Normal diets should be given to diabetics.

55 E. Washington St.

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Streptococcic Dissociation

By E. E. BROWN, M.D., *Ashland, Oregon*

DESPITE several hundred articles on the subject of dissociation or variation of bacteria, comparatively few physicians are aware of the extent of this variability and its profound significance. Brown (1) reviews evidence for the unity of streptococci, pneumococci, staphylococci and diphtheroid bacilli. The hemolytic streptococcus heads the family and is the chief inciter of disease.

The great range of dissociation of the hemolytic streptococcus in arthritic joints was shown in a meticulous study by Hadjopoulos and Burbank (1936). These observers obtained both in vivo and in vitro evidence of dissociation of the beta hemolytic streptococcus into the viridans (alpha) streptococcus and anhemolytic (gamma) streptococcus, and indeed, into the pneumococcus type III, staphylococcus aureus and albus, micrococcus catarrhalis and finally into the most inactive form of the streptococcus, the diphtheroid bacillus. The severity of the arthritic process paralleled the virulence of the dissociant cultured. The most active forms of arthritis yielded hemolytic streptococci; the least active, diphtheroids or no growth at all.

The same dissociants have been repeatedly reported in other streptococcic diseases. Acute rheumatic fever is probably initiated by a hemolytic streptococcus which may be recovered early from the blood stream. Later blood cultures reveal streptococcus viridans (Gray et al. 1932). Callow (1933) isolated streptococcus viridans, nonhemolytic streptococcus and pleomorphic bacilli from the blood of patients with rheumatic fever; under controlled conditions it was possible to transform selected strains of the bacilli into diplostreptococci of either the green or hemolytic type. Recently, Rantz and co-workers (1945) found types of hemolytic streptococci in the pharynx at the onset of rheumatic fever which differed from those cultured during the respiratory infection preceding the attack, suggesting a dissociation of types of streptococci.

Brown reviews dissociation of hemolytic streptococci in subacute bacterial endocarditis, pemphigus, impetigo, erysipelas, scarlet fever, otitis and mastoiditis. In subacute bacterial endocarditis, viridans streptococci may dissociate before death into hemolytic streptococci (Kastner; Jungmann; Lehmann). Kanof and Kramer (1941) state: "The mutation from the virulent to the non-virulent form of an organism makes the prognosis more favorable,

whereas the reverse usually spells a fatal outcome."

Dissociation of the hemolytic streptococcus and other virulent organisms to less virulant variants is constantly taking place in various body tissues, fluids and secretions. There are reports of these changes in lymph glands, immune blood, serum, nasal secretion, tears, saliva, perspiration, vaginal secretion and urine. Such dissociation and attenuation is logically interpreted as a defense mechanism on the part of the body.

Chilling of the body has been reported as predisposing to upper respiratory infections, rheumatic fever, scarlet fever and other streptococcic diseases. The alpha streptococcus is basic and is found in all pharynges. Conversion of the alpha to the beta streptococcus, following lowered resistance produced by chilling, is postulated as the mechanism involved at the onset of an upper respiratory infection which follows such chilling. The same dissociation is believed to occur in rheumatic fever, scarlet fever and other diseases which occur endogenously following chilling.

Success with prophylactic use of sulfonamides in the "largest controlled experiment in the history of medicine" (Carter) involving one million service men may be the result of the bacteriostatic action of these drugs, i.e., the prevention of the conversion of the alpha to the beta streptococcus. Conversely, in therapy, penicillin causes the disappearance from throat cultures of the hemolytic streptococcus, but this organism returns after cessation of treatment (Plummer and associates, 1945). This suggests streptococcic dissociation—beta to alpha and return to beta.

The untiring labors of Rosenow, Hadley, d'Herelle, Mellon, Dawson, Arkwright, Zinsser, Van Loghem and other investigators of bacterial dissociation have not been in vain. The road is now paved for understanding the bacterial antics following the use of penicillin and sulfonamides, following sudden changes in weather, and following changes in body defense. In the light of dissociation, we have a means of prognosis in disease, an explanation for some complications, and the probable clue to the origin of epidemics. Great vistas are opened by an appreciation of streptococcic dissociation.

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[There has been dispute among bacteriologists for years concerning the streptococcus. Zinsser once quipped that a bacteriologist who believed in the streptococcus as a cause of many pathologic conditions, must have had them painted on his spectacles, because he saw them under the microscope so often. Before laughing too long, one might remember that Pasteur was ridiculed for years.—Ed.]

Discussion

Statement regarding an editorial on "Streptococcus Dissociation": Dissociation of apparently pure strains of organisms occurs all through the bacterial kingdom. However, this dissociation has its limits and even the transformation of an Alpha (viridans streptococcus) into the Beta type and the reversal of this procedure has not been definitely proven; as a matter of fact, it has not been accepted by the vast majority of investigators. The relationship of rheumatic fever to hemolyticus streptococci is, as yet, not well understood and the suggestions made in the editorial are not borne out by experimental evidence. The entire conception of dissociation of organisms as presented in the editorial will not be acceptable to most of those whose views should be considered authoritative on the subject.—Ernest Witebsky, M.D.

EDITORIALS

In Asthma, The Clinical History Is of Vital Importance

When asthma begins before age 30 the cause is allergic unless proved otherwise. When asthma begins after 40 the cause is not allergic unless proved otherwise. To know the age of onset is vital.

In the young group of patients, it is the history which should reveal the cause of trouble. Skin tests are interesting, but sometimes there are positive tests with no symptoms to go with them, and at other times the patient is sensitive even though the skin tests show nothing. There are discrepancies both ways, and skin tests alone are not good enough. They do "point the way" and, if this way is confirmed by the history, then—and only then—do the skin tests make sense.

The First Attack

The clinical history must begin at the beginning. The very first attack, with its age and date of onset, its duration and the circumstances under which it occurred, must be described in full and with care. This attack ended after a time, and when was that?—and why was that? The dates and circumstances are vital.

In most cases the attack ended because the patient moved from one place to another; from the farm to the town, perhaps, or maybe only from one bedroom to another. Perhaps the asthma cleared at the time that the family dog was run over or the cat died.

Then comes an interval, sometimes quite long, with no asthma at all, after which the attacks began again. And, once more, when was that?—and why was that? It is the "ups and downs" in the story, with a study of the dates on which each "up" and each "down" occurs, which will make the diagnosis. It is the clinical history which will reveal the answer, by correlating the changes in asthma with changes in environment, in occupation or perhaps in diet.

Extrinsic and Intrinsic Asthma

The history will show whether the cause of trouble is something from which the patient can escape by moving away or maybe by avoiding some animal; or whether it is something which he carries with him at all times. The first group is of allergic etiology, and the great majority of the patients in it become asthma free in the hospital; in any hospital where the air and the furniture is clean.

The second group is "intrinsic": In these patients the cause is something wrong inside, which the patient carries with him. He does not improve promptly in the hospital, except as nursing care will make him more comfortable. To find what is the cause and the nature of "intrinsic" asthma is a serious challenge to all of us.—Francis M. Rackemann, M.D., 263 Beacon street, Boston 16, Mass.

Is the General Practitioner Necessary?

Today the general practitioner stands at the crossroads. If he is alert, studious, painstaking in history and examination, he will save many patients from dying agonizingly with cancer, he will prevent acute conditions from becoming

chronic, he will pay attention to minor symptoms and slight signs to detect early lesions and to relieve discomfort.

His duties have increased many fold. His knowledge must increase correspondingly and he must conscientiously apply that knowledge or he cheats his patients out of the help they should receive from him.

This department will, imperfectly and haltingly, attempt to simplify his task by briefly presenting diagnostic pointers and clearing away much of the accumulation that now clutters up our texts. Medical books are conservative, so conservative that much valueless material is retained, and the subject is not stripped down to its few essentials. Time saving hints and methods of office practice will appear from time to time.

Treatment—especially of minor conditions, is neglected by teacher and writer alike. Unfortunately, this tends to breed the idea that little troubles need little treatment or none at all.

It is only too well known that the mechanically minded physician is sadly lacking in proper training to care for or recognize mental diseases of the non-institutional type. How such a problem can be solved, inasmuch as it applies to those of us already in practice, is as much of a mystery to me as it is to you. We may learn to recognize those personalities which are headed for trouble, situations which tend to bring on mental confusion and ills, such as the spoiled youngster, the overindulged adolescent, the introspective, day-dreaming child, the wife who does not get along with her husband, the man who fails at job after job, the adult who thinks that he has enemies who plot against him. Frank cases of mental illness will be referred at once.

At the present time, there is no reliable means for estimating the physician's fitness for practice. It may be fairly well assumed that a doctor who attends a postgraduate course every year or two, who regularly attends nearby scientific meetings (which, if he is lucky, will be his county medical society meetings), who *studies his Journal of the American Medical Association* and a half dozen new texts each year and who keeps *careful*, complete case histories of his patients (and reviews them now and again to check on his diagnostic and therapeutic efforts), is fairly well prepared to take care of 80 per cent of patients in general practice.

The general practitioner should remember that the specialist is not infallible, that he may be biased in favor of certain diagnoses and special treatments in which he excels, a human trait. I am perfectly happy to carry around a normal sacro-iliac joint, which five years ago was accused by an eminent orthopedic surgeon of being diseased because of tenderness over the joint and pain on leg lifting. He advised me to have the joint fused. An internist in the same division of the clinic made a diagnosis of fibrositis and relieved me in three days with deep heat and massage.

So here it is—a clearing house for information. Knock it or boost it, but *use* it. R. L. G.

Of no use are the men who study to do exactly as was done before, who can never understand that today is a new day. We want men of original perception and original action, who can open their eyes wider than to a nationality—namely, to considerations of benefit to the human race—can act in the interest of civilization, men of elastic, men of moral, mind, who can live in the moment and take a step forward.—Emerson.

CLINICAL NOTES AND ABSTRACTS

Recent Advances in Orthopedic Surgery

1. Sulphonamides and antibiotics are of great value but have not replaced thorough excision of *compound or infected wounds*. Complete excision, preceded and followed by adequate physiologic support and assisted by chemotherapy and antibiotics gives the expectation of complete and relatively prompt recovery in cases which once were doomed to disability and continued treatment. Early skin grafting is indicated where there is not active infection, if normal skin cannot be drawn over the wound without tension.

2. Treatment of *chronic, draining sinuses* in osteomyelitis seems to be more successful if hourly injections of penicillin in combination with a wetting agent are used along with systemic therapy. In cases which do not respond, there is available the more radical method of excision and skin grafting.

3. In some cases doses of *penicillin* up to half a million units or more per 24 hours are effective when conventional dosage has no effect. It seems unwise to use minimal doses with an agent when large amounts have no undesirable effect and where suboptimal amounts may destroy any chance of success. New antibiotics will have to be developed as pathogenic organisms develop increased resistance to present therapeutic agents.

4. Studies on shock show that the best treatment is preventive. There is an increased tendency toward transfusions of blood and plasma during surgical procedures and after severe trauma regardless of the state of apparent well-being of the patient.

5. *Refrigeration anesthesia* is actually life-saving in some cases.

6. The prognosis of *rheumatoid arthritis* remains the same as it did ten years ago. Colloidal gold injections may offer hope for some cases. Alternate hydration and dehydration is still in the investigative stage.

7. To explose the proximal ends of *severed tendons* in the forearm, a soft rubber tube is wrapped around the forearm, from the proximal end to the distal end, milking the tendon down into the incision and making it unnecessary to extend the incision unduly. It helps also in stabilizing the proximal end during tendon surgery. (See Fig. a in accompanying illustration)

8. For removing *a ring from a swollen finger*, a piece of string is soaped and wound closely, in tight coils, around the finger proceeding from the distal end to the proximal end. The free end of the string is passed beneath the ring with a ligature carrier or loop of tonsil wire and, as the free end of the string is unwound, the ring is slipped slowly off the finger. (See Fig. b in accompany illustration)

9. A fatty or fibrous tumor involving the lateral branch of the medial plantar nerve is a rather common cause of intractable *metatarsalgia*. Excision of the involved portion of the nerve results in complete relief.

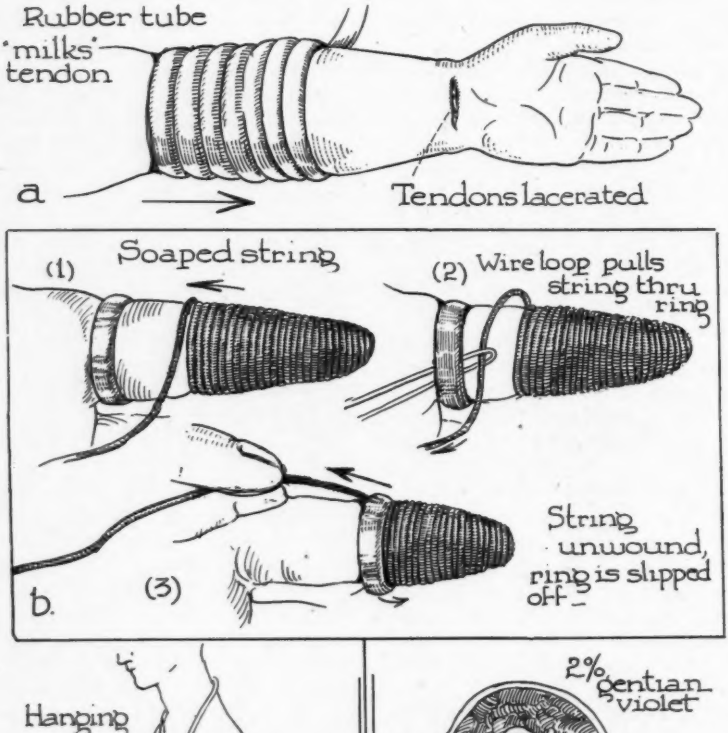
10. Authenticated cases of injury to

the intervertebral disc resulting from *faulty technic in spinal puncture* are being reported more frequently.

11. There has been a renewed wave of enthusiasm for the novocaine injection of *sprained ankle*. There is little reason to chance infection when adequate taping will enable the patient to resume activity immediately without risk of damage. (Hundreds of injections have been performed without infection.—Ed.)

12. *Tennis elbows* resist conservative therapy despite sanguine reports.

13. The pathology of "*painful shoulders*" is better understood. Attention to the neck and back will establish the diagnosis in many cases in which examination of the shoulder alone is normal. Such conditions as disc lesions in the cervical spine, anomalies of the first rib, mediastinal tumors and thrombosis of the subclavian artery must be kept in mind. The cause for the scalenus anticus



syndrome has been demonstrated to be in tissues other than the muscle.

14. Methods of repair for *recurrent dislocation of the shoulder* have been described by Bankart of England and by Magnuson; the former is technically difficult but the results are excellent, the latter is more readily done and effective, but is followed by rather marked limitation of external rotation.

15. Fibrous dysplasia of the bone, often diagnosed *giant cell tumor or bone cyst*, is more readily recognized (Allbright and Fuller) by characteristic radiological features (Hampton).

16. *Osteoid osteoma* is a clinical and pathological entity which can be cured by complete excision.

17. Oxygen injection into the knee prior to radiography frequently is helpful. In internal derangements of the knee the use of a double capsular incision is finding favor to assure the removal of the entire cartilage and prevent recurrent locking which follows incomplete meniscectomy.

18. There is a trend toward earlier weight bearing after *arthrotomy of the knee*, the author making his patients bear weight without crutches on the day of operation. McKeever and others have used cellophane as interposition material in arthroplasties with good results and no tissue reaction.

19. New alloy wires do not break when twisted and produce no tissue reaction; vitallium plates have been made malleable without loss of strength.

20. The Smith-Petersen nail remains most popular for fixation of the fractured femoral neck.

21. Recent studies indicate the advantage of traction treatment over either internal fixation, the Roger-Anderson or Stader treatment in *fractures of the femoral shaft*. The latter methods have a place in carefully selected cases.

22. Full supination of the forearm is necessary in the treatment of *supracondylar fractures of the elbow* in children to avoid cubitus varus deformity after the fixation is removed.

There is increased tendency to explore early traumatic conditions of the spine with neurological findings. Treatment of *compression fractures of the spine* without neurological findings, if done forcibly under general anesthesia, may be almost as bad as the injury itself. Gradual atraumatic hyper-extension and the use of a well-fitted brace instead of a hyper-extension body jacket are widely advocated. When gravitational compression is removed by a brace, there is no need in maintaining bedrest.

24. *Fractures of the shaft and neck of the humerus* are being treated with the hanging cast, a definite advance when done properly. (See Fig. c in illustration) Meticulous follow-up care is necessary to avoid unsatisfactory position. Physiotherapy is indicated.

25. Non-surgical appliances for care of certain orthopedic cases include the Baker back brace and the Williams low back brace. The former, which has metal uprights in front instead of in back, maintains hyperextension in the upper spine better than do other braces. The latter maintains the lumbosacral joint in forward flexion and maintains the greatest possible room for the fifth lumbar root to pass through the intervertebral foramen.

26. In regards treatment of bone ends and nerve trunks in *amputations*, 2% gentian violet solution injected into nerve stumps encourages the formation of constricting scars around the nerve ends with the inhibition of neuroma formation. (See Fig. d in accompanying illustration)

27. The prognosis for advanced *hypertrophic arthritis* of the knees, back and hips is improved by surgery.

28. Conservative treatment, including transfusion, hydration, penicillin and sulphonamides, in *acute hematogenous osteomyelitis* permits many patients

to recover without operation. Aspiration of pus is being used more frequently as opposed to free drainage.

29. Idiopathic scoliosis can be offered a good prognosis if treatment is instituted before gross deformity has occurred.

30. In *congenital dislocation of the hip*, a nearly normal functioning hip and a psychologically normal patient can be obtained by repeated surgical procedures and prolonged care.

31. The treatment of *congenital clubfoot* is still plaster-of-paris casts properly applied and both functional and anatomical normalcy can be obtained.

32. Operative fusion is still the best available treatment for *tuberculous joints*. The Brittain fusion for tuberculosis of the hip consists of a bone graft passed from the shaft of the femus to the pelvis below the acetabulum and thus avoids the joint space.

33. Conservatism in surgery for *ruptured intervertebral disc* is urged because of increasing numbers of cases with recurrent backache and sciatic pain following the removal of loose disc tissue. Sciatic pain, even with verified herniation of a disc, is not necessarily justification for operative removal of a disc. Many persons with disc herniations and with recurrent attacks of disabling pain from time to time are able to live satisfactorily without surgery. Treatment must be directed toward the fundamental skeletar abnormality which predisposes to the disc injury.

34. The use of a bone graft inserted from a posterior wound, such as is used in laminectomy, to obtain spinal fusion between the bodies of the vertebrae has been reported. Such a graft is contraindicated in inflammatory disease of the vertebral bodies, but in purely mechanical abnormalities it is more sound than the conventional fusion.

35. There is increasing use of cancellous bone chips which unite more rapidly and more surely to form solid new bone than the massive cortical grafts.—LLOYD, *Med. Annals Dist. Columbia*, XV, 309, July 1946. (Original illustration by *Clinical Medicine*)

"This Grand Cigarette Not Only Treats Your Throat, But Also Contains Vitamins A, B, C, D, and E!"

Surgery During Shock

Operations on seriously shocked patients are associated with a very high mortality rate. Cyclopropane and oxygen is the best anesthetic for such patients as it tends to raise the blood pressure. Nitrous oxide, oxygen and a minimal amount of ether is the next best anesthetic.— A. C. ROOKE, M.D., in *Anesth. & Anal.*, May-June 1946.

Increased Intracranial Pressure

Increased intracranial pressure, due to a brain tumor or brain injury may be diagnosed by recognition of papilledema ("choked disc"), a protrusion of the optic nerve, as seen through the ophthalmoscope: 1. The edges of the optic disc are blurred. 2. The veins are enlarged to twice the size of the arteries, and are tortous. 3. There is no pulsation of the veins when slight pressure is made on the eyeball. 4. Reddish discoloration of the disc may be present. 5. The disc is elevated. One rotates the lenses in the ophthalmoscope, while examining the disc, until the most prominent vessel on the disc is clearly seen. One then examines a vessel in the retina, parallel to the first observed vessel, until it is most distinct. The difference between the two lenses gives the elevation of the disc in diopters. If there is a difference of two diopters or more, choked disc is probably present.—ALFRED KESTENBAUM, M. D., (New York University Medical School, New York, N.Y.) in "Clinical Methods of Neuro-Ophthalmologic Examination" (Grune & Stratton, Publishers).

Intravenous Procaine for Delivery

The intravenous injection of 1 percent procaine solution gives good analgesia and partial anesthesia for delivery and repair of perineum, without injury to mother or child. 1,000 cc. of 5 percent glucose solution in water is used, to which is added 10 Gm. of procaine (the procaine is dissolved in a little water, sterilized and then added to the glucose solution). A drop of 2 percent procaine solution is injected intradermally and watched for 15 minutes to make sure that procaine sensitivity is not present, before starting the intravenous injection. Nembutal or other barbiturate is given before beginning the injection, to counteract any tendency toward convulsions, and the infusion is stopped when facial or other muscles twitch, reflexes are increased or there are other signs of impending convulsions. The rate of infusion is varied according to the degree of pain being experienced.—KENNETH JOHNSON, M.D. in *Current Researches Anesthesia & Analgesia*, July-August, 1946.

Treatment of Gonorrhea in General Practice

Gonorrhea may be treated in the physician's office by (1) a single intramuscular injection of 200,000 Oxford units of calcium penicillin in peanut oil and beeswax, or by (2) injecting 50,000 units of sodium penicillin dissolved in 6 cc. of water, repeating the dose in a hour, and then giving 100,000 units at the end of two hours, or by (3) 40,000 units every hour for 3 hours and then 80,000 units at the end of another hour.

Persons who have been in contact with the patient should receive treatment, to prevent spread of further infection. Persons who cannot be located or who refuse treatment may be reported to the state health department.—J. R. HELLER, M.D. in *J. Venereal Diseases*, Sept. 1946.

Benadryl for Urticaria

Benadryl is the most effective remedy for acute and chronic urticaria yet available. Average adult dose: one 50 mg. capsule every four hours; the effect appears in 10 to 20 minutes and lasts for 5 to 8 hours. It may be given intravenously in doses of 60 mg. dissolved in 100 cc. of physiologic saline solution, during a period of 10 minutes. Sleepiness, dizziness, dry mouth and some visual disturbances, epigastric distress and nausea, nervousness, frequent urination and mild interference with coordination may occur.—RALPH BOWEN, M.D. in *Texas S.J M.*, July 1946.

(Benadryl relieves many cases of hay fever, vasomotor rhinitis or allergic rhinitis, eczema and a few cases of allergic asthma.—Ed.)

Acute Retroperitoneal Appendicitis

This is a rare condition. The symptoms are almost completely altered in this type of case. The attack starts with pain in the lumbar region, with an uneasy or distressed feeling over the abdomen, with or without cramping and nausea, usually with high temperature and chill. The patient has all the symptoms of cellulitis and appears to be extremely sick.—CHARLES N. CARRAWAY, M.D., Norwood Clinic, Birmingham 4, Ala.

Pruritus Ani in the Female

The causes of this distressing condition are:

1. Anal Cryptitis. 2. Fissure-in-ano. 3. Fistula-in-ano. 4. Hemorrhoids. 5. Simple spastic anal sphincter 6. Fibrosis of the anal spincter. 7. Ano-rectal disease. 8. Fungous skin lesions. 9. Allergic conditions (food sensitivity, etc.). 10. Acute vaginitis. 11. Trichomonas vaginalis infestation. 12. Endocervicitis. 13. Lacerations of perineum and cervix. 14. Diseases of the fundus and appendages. 15. Bowel dysfunction and abuse of carthartics. 16. Poor anal hygiene. 17. Nervousness and fatigue. 18. Obesity. 19. Diabetes. 20. Debilitating diseases, such as tuber-

R. B. CATTELL, M.D., in *Medical World (England)* April 26, 1946.

Streptomycin for Infections

Streptomycin, injected intramuscularly, is very effective in *tularemia, peritonitis, and otitis media* due to gram-negative organisms. Certain types of *urinary tract* infections respond well. Hemophilus influenzae meningitis may respond to intramusclar and intraspinal injections. *Bacteremia* is cleared in many instances. Typhoid is not improved. There is no effect in acute brucellosis. Pulmonary infections often improve.—CHESTER S. KEEFER, M.D., in *J.A.M.A.*, Sept. 7, 1946.

Treatment of Leukemia: Questions and Answers

Question: What help can I give to a patient who has myeloid leukemia, apparently of a chronic type? Blood smears have been sent to several hematologists and pathologists who agree on this diagnosis. His spleen is moderately enlarged. He has lost 25 pounds in 3 months and is so weak that he hardly can carry on as a farmer. H.M.C., M.D. Dayton, Ohio.

Answer: References are given in the attached list to recent study in the therapy of leukemia. Briefly stated, leukemia still has a poor prognosis but the duration of life under proper therapy may be much longer.

Transfusion of blood: The problem of anemia is managed by frequent transfusions, which give the patient considerable, although temporary relief.

X-ray therapy: Intensive irradiation for 3 days over the spleen or mediastinum is to be preferred to the spray method of treating the whole body at weekly intervals.

Arsenic (Fowler's solution): In certain cases, good symptomatic results follow the oral administration of Fowler's solution. Forkner's directions: 1. Begin with doses of 5 drops three times daily and increase by 1 drop per dose, (3 drops daily) every second day. When 30 drops are being taken, increase by 1 drop daily until the leukocyte count is less than 10,000 or until toxic symptoms (metallic taste, burning in esophagus and stomach, colicky pains, vomiting and diarrhea, thirst, and dryness of mouth, depression, vertigo, musicular cramps, cyanosis, stupor or coma, (collapse) appear. Gradually decrease the dose by 1 drop daily until 5 drops are given three times daily.

2. Give the medication continuously and watch the results carefully.

3. Disregard anorexia, nausea or occasional vomiting, except for discontinuing the drug for several days.

Urethane: Patterson et al report that eurethane (ethylcarbamate) gives as great a palliative effect in leukemia as x-ray, with a reduction in white blood cell count, decrease in abnormal white cells, diminution in size of spleen and enlarged lymph nodes, and a rise in hemoglobin level.

℞ Urethane	1.0 Gm.
Syrupi auranti	1.5 cc.
Aqua chloroformi	15.0 cc.

If nausea occurs, give the urethane by rectum. Urethane affects both the

red and white cell formation in some patients.

Fever therapy in association with x-ray treatment has been employed by Hartmann in the form of intravenous typhoid vaccine injections. A small test dose is given subcutaneously; if no reaction occurs, 20 million organisms intravenously are given. The dose is increased rapidly so that a fever is produced each time, up to a total of 6 to 8 injections.

Radioactive substances are being employed in the treatment of a few patients. These materials can be given orally or intravenously and have the same effect as x-ray therapy with the advantages of acting directly on the tissue affected and without causing nausea.

Thiouracil has been tried by Limarzi and associates. They feel that "in sufficient doses it regularly inhibits granulopiesis and destoys granulocytes, an effect independent of individual susceptibility; there is no clinical improvement in thiouracil treated cases of leukemia."

The urine of patients with leukemia contains a factor which produces myeloid hyerplasia when injected into animals.

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Mercuhydrin

Mercuhydrin, a new mercurial diuretic of the salyrgan and mercupurin group, can be given by intramuscular injection with less chance of causing pain. The manufacturers have published advertising matter in which it is implied that the material will rarely or never cause local reactions when injected intramuscularly and is safer to use. *Clinical Medicine* wrote to a well known pharmacologist. His answer:

"Mercuhydrin is one of the organic mercurial diuretics of the group similar to mercupurin and salyrgan. It has the same activity as the other two compounds and is subject to the same dangers. It is less irritating than the other two on intramuscular injection. . ." "I have never seen or heard of a case of local necrosis following mercuhydrin injection."

Penicillin Treatment of Scarlet Fever

In patients receiving penicillin intramuscularly, hemolytic streptococci disappear from cultures of the nose and throat within 48 hours and when the penicillin is discontinued for one week the original types of hemolytic streptococci do not reappear. On the contrary, following successful sulfadiazine or local penicillin therapy, hemolytic streptococci tend to reappear when treatment is discontinued. Early systemic penicillin therapy in adequate doses

may eliminate the streptococcus carrier state as well as prevent complications. Toxic manifestations of scarlet fever are not diminished by the use of penicillin. Finland; M.D. *J.A.M.A.*, Nov. 17, 1945.

Biologicals: Anti-biotics

New biologicals have added a lusterous page to modern medicine. A century ago, roots, barks and berries furnished the active principal of most therapeutic procedures. The fact that these therapeutic substances came from "natural" sources seemed at that time to lend the weight of validity to their use. Such modern therapeutic agents as anti-biotics, anti-toxins, globulins, and others are in the same sense "natural" products.

What is usually spoken of as biologicals, are the products of the reaction to animal life to the stimulation of antigens. The biological products used in medicine are just as much the product of natural processes as the roots, barks and berries of their predecessors. When a suitable antigen or stimulating substance is injected into a person, the body's response is to produce substances inimical to a second attack of the same antigen. For example, diphtheria toxin suitably treated, when injected into a preschool child will stimulate the body to produce substances that protect the child against the disease, diphtheria. This establishes an active immunity which can be measured in the laboratory and remains with the person for a term of years. Smallpox vaccine and typhoid vaccine are also examples of this type of protection.

Pertussis

Recent studies made on the use of Phase 1 pertussis vaccine seem to indicate that this new biological product may be included in this group.

Diphtheria

When a suitable prepared antigen made of diphtheria toxin is injected into horses, an anti-toxin develops in the horse's blood which may be removed and used to treat cases of diphtheria. This same anti-toxin may also be used in the prevention of diphtheria, but this passive protection remains for only a term of weeks.

Anti-Biotics

The anti-biotics are extracts of molds, a low form of plant life. They have been found to have definite and positive bacteriostatic action on bacterial growth in the human body. For example, the common mold penicillium notatum contains a substance which can be extracted and used to inhibit the further growth of certain bacteria in the human body. When the blood steam contains a high level of this extract (penicillin) further growth of certain bacteria is inhibited or stopped. This gives the body an opportunity to marshall its curative forces in the interest of the patient's recovery. The maintenance of a high blood level of penicillin is necessary if the drug is to exert its full affect. This anti-biotic is readily absorbed and reaches its height in the blood stream at about the end of the second hour after administration. It is eliminated so rapidly that the dose must be repeated at intervals of about four hours.

Scarlet Fever

While the full knowledge regarding the methods of attack of scarlet fever are yet to be determined, this disease may be used to illustrate the uses of biologicals and anti-biotics. The rash the prostration, the fever and possibly some of the other symptoms of scarlet fever are thought to be due to the toxin elaborated by the invading organism. This toxin can be neutralized by the proper administration of streptococcus anti-toxin.

Anti-biotics and sulfa drugs have not been found uniformly useful at this stage of the disease. The patient is being attacked by the toxin and the appropriate anti-toxin is indicated. The complicatios or sequela of scarlet fever such as mastoiditis, lymph ademitis, and so on, are bacterial invasions. These can be best controlled in their early stages at least by a powerful bacteriostatic substance, such as penicillin.

Anti-biotics do not act as preventives nor are they anti-toxic. They do inhibit bacterial growth. already started in the body and have been found to be highly effective when properly chosen and properly administered.—Don M. Griswold, M.D., *Geneva General Hospital*, Geneva, New York.

Heparin for Frost Bite

If terminal organized clotting in the frost bitten extremity could be prevented, the seriousness of frost bite gangrene could be reduced 72 hours after frost bite. The clumped red blood cells in the capillaries become coagulated, so that treatment must be begun during the first two days.

Heparin slows down coagulation. It should be started immediately by intravenous injection and dicumarol (an oral anticoagulant) given by mouth.—*J.A.M.A.*, Sept. 22, 1945.

Seasickness or Airsickness

Dry mouth or thick saliva, loss of appetite, salty taste in mouth, yawning, or a sensation of warmth are the early symptoms of seasickness or airsickness. Tilting the head backward renders the labyrinth less susceptible to the up and down movement. The individual should look at the horizon or a fixed object so as to appreciate the movement of the craft. Atropine sulphate in doses of 1/60 grain for men and 1/75 grain for women is often effective. Scopolamine hydrobromide in doses of 1/100 to 1/200 of grain is often helpful. The combination of atropine and strychnine has been successfully employed. Pilocarpine nitrate in doses of 1/6 to 1/8 grain subcutaneously relieves symptoms of a sympathetic type of sickness. Sedatives may be employed in the usual doses.

Conversion of Direct into Indirect Hernia

A direct hernial sac may be converted into an indirect one or combined indirect and direct herniae may be converted into one indirect hernia by (1) finding the indirect sac, which is always present, but may be very small, (2) separating the sac from the elements of the spermatic cord and opening it, and (3) making traction laterally on the indirect sac, thus pulling all of the peritoneum of the direct sac outward under the epigastric vessels and converting the two sacs into one. All possibility of injuring the bladder is eliminated, because the bladder folds can be seen. This simple technic was advocated by J. Pierre Hoguet many years ago (*Annals of Surgery* 1920).

Digitalis Toxicity

State the reason for the accumulation of digitalis bodies and the appearance of toxic symptoms:

Digitalis is slowly detoxified and eliminated; repeated doses therefore produce cumulative effects. Exactly what happens to the active glycosides in the body is not well understood. Only small amounts are excreted unchanged in the bile and urine.—K. L. KAUFMAN, Ph.D., Assistant Professor of Pharmacology, Medical College of Virginia. Richmond, Virginia.

THUMBNAIL THERAPEUTICS

Penicillin for Syphilis

Penicillin is a satisfactory treatment of syphilis in pregnancy. The injection of 2,400,000 units gives satisfactory results in the mother and prevents syphilis in the infant. 10,000 units are given each 3 hours for the first 8 injections, 20,000 units each 3 hours for the following 8 injections, and 40,000 units are given for 54 more injections.

Infants with syphilis are treated with doses up to 75,000 units per pound of body weight over a period of 15 days.

Early syphilis should be treated with at least 2.4 million units of penicillin given over a period of at least 7½ days by intramuscular injection at not longer than 3 hours intervals.—*J.A.M.A.*, Mar. 16, 1946.

Acute External Otitis

The acute, painful swelling of the ear canal (external auditory meatus) may be relieved by packing narrow strips of gauze, soaked in 8 per cent aluminum acetate solution, into the canal.—R. L. Gorrell, M.D., Clarion, Iowa.

"Black Widow" Spider Bite

The intravenous or intramuscular injection of a sterile 10% or 25% solution of magnesium sulphate relieves the pain and muscle spasm of "black widow" spider bite within a few minutes.—P. L. Davis, M.D., *J.A.M.A.*, March 16, 1946.

Blood Transfusion to Allergic Patients

If there is a history of allergy, such as hay fever or asthma, or if urticarial hives appear early in the course of transfusion, you must go carefully or stop the transfusion. Death has been recorded in such cases.—F. A. Knott, M.D., *Med. World*, (Eng.), Sept. 28, 1945.

Penicillin for Agranulocytosis

The patient with agranulocytosis *does not die because of his abnormally low number of leukocytes*, he dies because of lack of resistance to infection. Penicillin in 40,000 unit injections every 3 hours will counteract many infections, permit the patient's leukocytes to increase. Sulfonamides have also been used effectively but must be watched closely because they may also cause agranulocytosis.—E. W. Boland, M.D. in *J.A.M.A.*, Mar. 2, 1946.

Anesthetic Convulsions

The intravenous injection of sodium pentothal will relieve convulsions during anesthesia. Oxygen should be given in high concentration at the same time.—Stanton Belinkoff, M.D. (Resident Anesthetist, Lenox Hill Hospital, New York, N.Y.) in *American Journal of Surgery*, May, 1946.

Enemas

One should not use soapsuds enemas, glycerine enemas, or any type of enema too soon after operation. The use of daily, small, non-irritating enemas in surgical cases should be encouraged. The continuance of the use of strong enemas or the hit and miss laxatives upsets the daily normal bowel movement.—E. S. Hicks, M.D., *Med. World*, (Eng.) Sept. 28, 1945.

Female Sex Hormones

The discovery in recent years of simple and cheap benzene derivatives (diethylstilbestrol or stilbestrol, hexestrol, benzestrol) which are not only effective substitutes, but actually are converted into the hormone itself in the body, makes possible adequate estrogenic replacement therapy available at little cost.—A Gollman, M.D., in *"Essentials of Endocrinology"* (Lippincott).

DIAGNOSTIC POINTERS

Bromide Intoxication

Bromide intoxication is characterized by sleepiness, slurred speech, dulling of higher mental functions and unsteady gait. If doses are increased, incontinence, disorientation and generalized helplessness appear.

In a psychroneurotic or psychopathic individual, the above symptoms appear plus a "bromide psychosis" characterized by delusions, hallucinations and disorientation, plus crying, excitement and confabulation.—C. H. MILLIKAN, M.D. and W. D. PAUL, M.D. (University Hospitals, Iowa City, Iowa) in *J. Iowa S. M. S.*, Feb. 1946. (In this carefully controlled study, the authors demonstrated that doses of 15 to 20 gr. may be taken three times daily without toxic symptoms, and that some patients can take 30 grains thrice daily.—Ed.)

Insomnia from Heart Failure

There are patients with left ventricular failure and pulmonary vascular congestion who complain of insomnia and not of shortness of breath. The patient usually insists on sitting up, which is evidence of ill defined orthopnea, and there may be physical signs of left ventricular failure (gallop rhythm, pulsus alternans, accentuation of pulmonary second sound). *Treatment*: Low salt diet and mercuria diuretics, such as mercupurin, intravenously.—P. D. WHITE, M.D. in *J. A. M. A.*, Dec. 22, 1945.

Muscular Pains

Vague muscular pains and stiffness may be the only symptom of rheumatic fever in adults or children. Lumbar backache is frequent and may be accompanied by urinary frequency and microscopic urinary findings of pyelonephritis.—D. H. ROSENBERG, M.D. in *New Eng. J. Med.*, Jan. 31, 1946.

Cervical Secretions

Spermatozoa penetrate cervical mucus for an appreciable distance only when the mucus is translucent and thin; when the mucus is viscid, although the sperm are strongly attracted, the viscidity impede their upward progress.

Pregnancy Test

Cervical mucus during pregnancy becomes thick, rather than runny, opaque, is difficult to draw through a tube and is markedly sticky.—A. F. CLIFT, F.R.C.S. in *Proc. Royal Soc. Med.*, Nov., 1945

Bladder Disturbances and Rectal Cancer

Any patient complaining of bladder symptoms should be examined rectally. A smooth, pear shaped, pedunculated polyp may be found, which should be promptly removed to prevent malignant degeneration. Narrowing of the bowel, infiltration, fixation, excessive pain on palpation, blood on the examining glove, or a hard ulcer should make one suspect cancer of the rectum.—*Urol. & Cut. Rev.*, Oct., 1945.

"Nervous Indigestion"

Nervous indigestion, gas, heartburn, constipation and other vague gastrointestinal symptoms may be due to hemorrhoids. Examine such patients with a long proctoscope for high lying hemorrhoids. Injection treatment relieves the symptoms of dyspepsia.—WILLIAM FRANKMAN, M.D. (Wollaston, Mass.) in *Med. Rec.*, Dec., 1945.

Fat Boys

Fat boys with genitalia "lost" in fat usually do not have Frohlich's syndrome. —E. H. RYNEARSON, M.D.

NEW BOOKS

Any book reviewed in these columns will be procured for our readers if the order, addressed to CLINICAL MEDICINE, Waukegan, Ill., is accompanied by a check for the published price of the book.

Anesthesia in General Practice

By Stuart C. Cullen, M.D., Head of Anesthesiology, University of Iowa Hospitals. Year Book Publishers. 1946. $3.50.

The practitioner who studies this small text will be able to: 1. Give a good general anesthetic, with proper technic and safety to the patient, 2. administer proper treatment for local and general anesthetic reactions and complications, 3. perform many operations under local anesthesia and 4. relieve the pain of injured ribs (by a simple intercostal injection of procaine solution), sciatica and other neuralgias. The author combines humor, practical advice and scientific principles.

Essentials of Clinical Proctology

By Manuel G. Spiesman, B.S., M.D., Proctologist, Mt. Sinai and Edgewater Hospitals.—Grune & Stratton. 1946. $4.00.

A very brief manual summarizing the common conditions to be found in the anorectal area. Information is given in almost telegraphic style. The illustrations are diagrammatic. One practical suggestion is the local application of 5 percent phenol in oil three times weekly for *anal fissure*. The material on the pecten band and its division is complete and well illustrated. The book is well suited to use during a graduate course, where the student observes various lesions and technics.

Narco-Analysis

(A New Technic in Short-Cut Psychotherapy)

By J. Stephen Horsley, M.D., Deputy Medical Superintendent, Dorset Mental Hospital, England. Oxford University Press. 1943. $2.50.

A brief handbook detailing from the literature and from personal experience, the indications for, technic of and results from the use of sedative agents for establishing rappaport between the resistant case and the psychiatrist or physician. The author states that he has been using this method since 1931. Experiences are given concerning its use in the outpatient department and in the hospital.

The Management of Obesity

(A Handbook for the General Practitioner)

By Louis Pelner, M.D., Associate Physician, Greenpoint Hospital. Personal Diet Service. 1946. $3.00.

A very practical manual emphazing the use of appetite controlling drugs (benzedrine, atropine, thyroid extract, metamucil, aminophyllin), proper low caloric diets, reducing exercises and psychotherapy, in the management of overweight. Historical, and clinical aspects and case records of successfully treated patients add value.

Practical Marlariology

Paul F. Russell, M.D., Col. M.C., Army Medical School, Parasitology Division; Luther S. West, Ph.D., Head of Biology Dept., Northern Michigan College of Education; Reginald D. Manwell, Sc.D., Professor of Zoology, Syracuse University, New York. W. B. Saunders Co. 1946. $8.00.

A complete presentation of one of the most serious hazards of war or peace, with a discussion of the parasite, many illustrations depicting it, and staining technics; the mosquito and relevant laboratory technic; the man, his clinical symptoms, pathologic changes and proper treatment; the public health aspects and complete details on preventive therapy related to civilian and war communities. The keys to world anophelines will delight the perplexed student and investigator.

The Treatment of Bronchial Asthma

By Vincent J. Derbes, M.D., Instructor in Medicine, Tulane University School of Medicine, New Orleans and Hugo T. Engelhardt, M.D., F.A.C.P., Instructor in Clinical Medicine, Baylor University College of Medicine, Houston, Texas, and other contributors. J. B. Lippincott Co. 1946. $8.00.

A very complete presentation of the diagnostic measures and therapy used in all types of asthma, including cardiac. Allergic aspects, elimination diets and skin testing are described in detail. Not the least interesting is Ochsner's resume of various surgical measures, including stellate ganglion injection and removal, for severe asthma. Medical measures are described in full.

Mother and Baby Care in Pictures

By Louise Zabriskie, R.N., Director, Maternity Consultation Service, N. Y. C. Lippincott. 1946. $2.00.

Just the sort of literature your pregnant patients need to answer a hundred questions and save you phone calls! The pictorial material on the proper way to dress, feed, and otherwise care for the baby and small child furnishes accurate information for mothers. I intend to prescribe these routinely during pregnancy.

A Primer for Diabetic Patients

By Russell M. Wilder, M.D., Professor and Chief of the Department of Medicine, Mayo Clinic, Rochester, Minnesota. W. B. Saunders. 8th Ed. 1946. $1.75

A very complete instruction manual for the intelligent diabetic patient who is to be treated by weighed diet and insulin. Directions are explicit and detailed.